



RAIN Research Agenda
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December 5th, 2013



SALT STE MARIE
INNOVATION
 CENTRE

Northern Ontario Research, Development, Innovation and Knowledge
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 Northern Ontario Heritage
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 de l'Ontario

Penobscot Hills Farms
 Quality Meat Care & More

FedNor Canada

Acknowledgements

The following individuals and organizations are acknowledged below for their ongoing support of the Rural Agri-Innovation Network (RAIN) project:

- Errol Caldwell, Sault Ste. Marie Innovation Centre
- Dr. Gayle Broad, NORDIK Institute, Algoma University
- Penokean Hills Farms Inc.
- FedNor
- Northern Ontario Heritage Fund Corp.
- Ontario Trillium Foundation
- Algoma University
- Rural stakeholder organizations – Algoma Federation of Agriculture, Algoma Cattlemen’s Association, Algoma Soil & Crop Improvement Association, Algoma Woodlot Owners
- Algoma municipalities and townships – Municipality of Huron Shores, Township of Laird, Township of Prince, MacDonald Meredith & Aberdeen (Echo Bay) Township, Township of Plummer Additional and the Township of Tarbutt
- City of Sault Ste. Marie and the Economic Development Corporation
- Sault Ste. Marie & Area Community Development Corp. and the East Algoma Community Futures Development Corporation.
- Many more local producers and businesses

Table of Contents

1.0 Introduction	4
1.1 Purpose of the RAIN Research Agenda	4
1.2 Overview of the RAIN Terms of Reference	5
1.3 RAIN Advisory Committee	6
Figure 1.0 – RAIN Organizational Structure	8
2.0 Literature Review	9
2.1 Agriculture in Algoma and Northern Ontario	9
2.2 Agricultural Research in Algoma.....	11
Table 1.1 - Historical Algoma Crop Trials	13
2.3 Overview of Existing Projects	13
2.3.1 Crop Rotation Options for Canola Production in Algoma District	13
2.3.2 Crop Performance and Production Analyses for Purpose Grown Biomass in Algoma District .	14
3.0 Research Methods	15
3.1 RAIN Research Agenda Information Sessions	15
3.2 RAIN Research Agenda Survey	16
3.3 Tile Drainage and Storage Information.....	16
4.0 Research Priorities	18
4.1 Situation analysis of agriculture in Algoma	18
Table 2.1 - Farm Profile of Survey Respondents	18
Table 2.2 – Survey Results: Obstacles and Threats	19
Table 2.3 – Survey Results: Strengths and Opportunities.....	21
4.2 Summary of research priorities and projects	23
4.2.1 RAIN Research Projects	24
4.3 RAIN Theory of Change	26
Figure 3.0 - Logic Model Example.....	26
Table 3.1 - RAIN Logic Model	26
5.0 Internal situation analysis of the RAIN.....	28
Table 4.1 - RAIN SWOT Analysis	28
Table 4.2 - RAIN Funding Deliverables.....	29
Table 4.3 - Research and Development Projects 2013/14.....	30
5.1 RAIN staff.....	30
6.0 Conclusion	31
Bibliography	33
Appendix 1 - Information Sessions Event Summaries and Comments	35
Appendix 2 - RAIN Research Agenda Survey	40
Appendix 3 - Agricultural Tile Drainage & Storage Questionnaire	43

1.0 Introduction

The Algoma Rural Agri-Innovation Network (RAIN) has completed its first year of the 3-year pilot project for the delivery of projects and services beneficial to the agricultural and agri-forestry sector in Algoma District. The RAIN's vision is to connect Algoma's agriculture community with timely information and support to improve opportunities for maximizing the value of rural based crops, commodities, products and services. The RAIN aims to accomplish this vision through agri-based research coordination, creating links to technical, marketing, human resource capacity and business development assistance within the region. The RAIN was developed through ongoing discussions with stakeholders, consultations with local growers, and through the efforts of its co-chairing organizations, the Sault Ste. Marie Innovation Centre (SSMIC) and the Northern Ontario Research Development Ideas Knowledge (NORDIK) Institute. These discussions have produced the RAIN Terms of Reference and the RAIN Stakeholder Discussion Paper by The Possibilities Group of Sault Ste. Marie, through the support of local stakeholders and funders. Since that time, both SSMIC and NORDIK Institute have gathered support for the RAIN from local producers, businesses and government funders (including Northern Ontario Heritage Fund Corp, Ontario Trillium Foundation and FedNor). These stakeholder organizations and funders have continued to be involved through RAIN's Advisory Committee that has assisted in giving direction to its research priorities.

1.1 Purpose of the RAIN Research Agenda

The purpose of this document is to build on the RAIN Terms of Reference to formalize RAIN's research priorities for the next two years of the RAIN pilot project. The RAIN's Research Agenda will include a brief summary of the Terms of Reference, an overview of existing projects that have been established through grower support, a situational analysis and an outline of the Research Agenda that will include a logic model with project outcomes and activities. This plan will assist RAIN's staff, stakeholders and partners to get a broader understanding of how producer input will result in an applied research approach for RAIN over the next two years. The project will relate how applied research will meet the goals of the pilot project that aims to stimulate the agricultural sector in Algoma District and in the rest of Northern Ontario. Development of a Research Agenda is one of the deliverables associated with Trillium Foundation funding.

In addition to research that will be conducted, the RAIN is also exploring how a collaborative network can strengthen the agricultural sector. Additional activities that the RAIN will be undertaking

include business development assistance, networking and public outreach. The Research Agenda will discuss how research dissemination and training activities can be implemented. This document also serves to build a foundation in order to understand how the RAIN will sustain its activities after the three year pilot project has been completed.

1.2 Overview of the RAIN Terms of Reference

The RAIN Terms of Reference outlined several key findings through consultation sessions and interviews with various stakeholders and researchers on the agricultural sector in Algoma District. The RAIN Terms of Reference identified five key areas that were focused on for the RAIN pilot project:

Research and development – The RAIN Terms of Reference highlighted that agricultural research for new crops and livestock diversification from a Northern perspective is critical in maintaining sustainability of the industry in Algoma. It was deemed that the RAIN should research new crops, identify methods to diversify livestock and apply value-added opportunities, driven by the Northern environment, economy and market. This would be implemented through facilitating crop trials, extension services, identifying products to develop, and assisting growers with addressing their research questions. It was identified that there is a need for a community-driven yet flexible process for the scale of agriculture deemed appropriate, which would support both large and small producers.

Infrastructure development - For agri-businesses in Algoma at multiple scales of operation, a lack of infrastructure was seen as inhibiting growth, including both off-farm and on-farm infrastructure. The Terms of Reference identified that there must be direct investments in infrastructure within individual businesses or through grower co-operation. However, local stakeholders expressed that the fiscal resources to build new facilities for the storage and drying of crops is risky and would require additional investment from other sources. Other infrastructure included investments in grading equipment, cold storage and processing equipment to improve year round sales of some products. Tile drainage was seen as a critical infrastructure to be expanded in Algoma and across Northern Ontario.

Networking assistance and business development – The Terms of Reference recognized that on-farm capacity building needs to be developed through education, training on new technologies, technology transfer and awareness. Capacity building would create and sponsor activities and events that benefit agricultural producers in Algoma, such as producer related training and conferences. In order to be effective, the RAIN would seek to develop stronger relationships with other research institutes including

the University of Guelph as well as other Northern researchers that could assist with building on-farm capacity and knowledge sharing.

It was noted that there are new farmers that need assistance with business start-up. In order to provide support for these producers, it was recommended that the RAIN would provide producers and agri-businesses with business development assistance (i.e. market analysis, business plan assistance and market development). This could also include organizing training programs and providing needed services to businesses. In addition, it was noted that many local farmers have sought off-farm jobs to supplement income; as a result, the amount of a producer's volunteer time has reduced significantly.

Public outreach and communications - It was noted that RAIN should actively support and communicate the needs of Algoma growers, organizations and related businesses to the public, government, private sector and education sectors. One of the needs noted in the Terms of Reference was that Algoma farmers are an aging demographic, and that youth attraction and retention is important to maintain the future of farming. It was also noted that there needs to be increased efforts to improve public awareness of local food production as well as better connection of local food networks to take advantage of the 'buy local' mentality. A greater, cohesive presence is needed to share existing activities, efforts and knowledge with the greater community.

Resource and data collection – Access to information in a variety of forms and on a timely basis, was determined as being a necessary component to foster innovation and bring best practices to the region. It was recommended that RAIN should develop a library of electronic and hardcopy information for individuals and organizations related to business start-up, research publications, information on the regulatory environment, funding resources and agriculture organization publications and newsletters.

1.3 RAIN Advisory Committee

In order for the RAIN to remain focused on priorities, a RAIN Advisory Committee was formed. The purpose of the RAIN Advisory Committee is to provide leadership and advocate their support for the RAIN pilot project. This includes presenting interests and concerns of their organizations and to identify priorities for the RAIN project. The Advisory Committee consists of volunteer representatives from (but not limited to):

- The Sault Ste. Marie Innovation Centre
- NORDIK Institute (Algoma University)
- Penokean Hills Farms

- The Algoma Soil and Crop Improvement Association
- The Algoma Federation of Agriculture
- Christian Farmers Federation of Ontario
- Algoma Cattlemen's Association
- Algoma Food Network
- Representatives of area First Nations and other Aboriginal Organizations
- Grassroots representation from Algoma's agriculture community
- An observer from the Algoma Mennonite Community (to act as a point of contact and liaison)

The Advisory Committee also encourages the participation and contribution of appropriate resource people from the regional Community Futures Development Corporations (CFDCs), Ministries of Agriculture and Food, Natural Resources, Northern Development, Mines & Forestry and FedNor. Feedback from the RAIN Advisory Committee meetings so far has identified a number of research priorities to be addressed through the RAIN pilot project. The project is overseen through a project management structure consisting of the Advisory Committee, two project Co-Chairs, the RAIN Project Coordinator and support staff, which is outlined below:

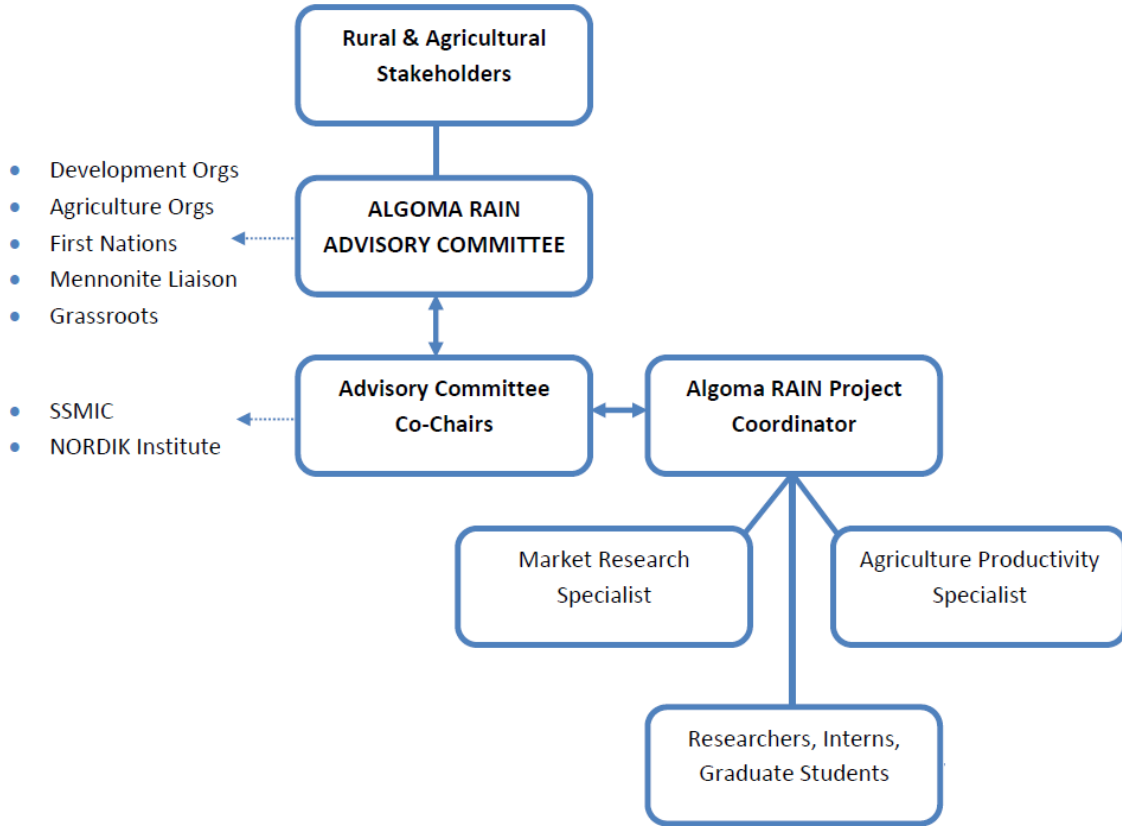


Figure 1.0 – RAIN Organizational Structure

2.0 Literature Review

2.1 Agriculture in Algoma and Northern Ontario

According to the Ontario Ministry of Agriculture & Food, Algoma is one of the 10 districts of Northern Ontario that has a number of competitive advantages including a substantial farmland base that supports the growth of a variety of crops; lower land prices relative to land prices in Southern Ontario and access to a regional market in Northeast Ontario (Sault Ste. Marie and Sudbury). In Algoma, the majority of agricultural production occurs in an area that begins just north of Sault Ste. Marie and extends south and east to Blind River. A considerable amount of agricultural production also occurs on St. Joseph Island, which is also known for its successful maple syrup industry. In the north, conditions for farmers are challenging with an aging farming population, limited research capacity and infrastructure, shorter growing seasons and the threat of frost over nine months of the year; but that does not mean that agriculture isn't present and cannot thrive in the area. According to the 2011 Agricultural Census, there were 317 farms in Algoma, which represents 0.61% of total farms in Ontario (OMAFRA, 2011). The Algoma-Manitoulin Agri Sector Profile Report December 2009 indicates that there is more than 292,000 acres of farmland in the region. This is down from 342,000 acres in the early 1980s, but still substantial (Harry Cummings and Associates, 2009). The report also notes that from a soil and climate perspective, oilseed crops could be grown in the region if the supporting infrastructure (tile drainage, storage and drying facilities) existed. Traditionally, farmers in Northern Ontario have focused on mixed hay, forage and cattle. However, as Northern Ontario grows and diversifies and as the climate's temperature increases new opportunities for cash crops and value added business will emerge.

According to OMAFRA (2012), cattle (and calves) and dairy comprised farm cash receipts for main commodities in Algoma were \$3.9 million and \$3.8 million respectively. With approximately \$7.7 million in cash receipts for cattle and dairy, this includes 745 dairy cows and 8,803 cattle and calves in Algoma (Ontario Ministry of Agriculture & Food, 2012). The amount of beef cattle ranching and dairy farming in Algoma requires major field crops of hay and forages (accounting for 11,255 hectares in Algoma), grains (oats, barley) and corn for grain and silage. Farmers in Algoma also use combinations of legumes (peas, alfalfa) and grains for feeding cattle. In 2011, Algoma has over 7250 hectares of pasture (tame, seeded and natural land) for livestock (Ontario Ministry of Agriculture & Food, 2012). Other major agricultural products in Algoma include floriculture (flower greenhouses, sod, and nurseries), maple syrup products, and mixed livestock (pigs, sheep, and goat). Maple syrup is a growing industry in Algoma, with 84% of the total maple taps on trees in Northern Ontario.

Farming in Northern Ontario has several challenges, notably a limited growing season and distance to markets, relative to other parts of Ontario. As the second largest district in geographic size and population within Northeastern Ontario, and third largest in geographic size and population among the Northern Ontario districts, it is apparent that for the Algoma District to achieve sustainability, the approximately 32,782 hectares (81,000 acres) of existing farmland must be utilized to its greatest potential to be able to serve its population. In an agricultural resources study of Northeastern Ontario, Caldwell & Marr (2011) found that “long distances to market, limited infrastructure, and somewhat limited crop choices all present challenges to agriculture, particularly in the model that exists elsewhere in the province” (p. 11). Another key weakness identified in the study was the aging farming community and the limited farming culture within the new generation, which significantly puts the regions farming knowledge at risk (Caldwell & Marr, 2011, p. 11). The project did present a few opportunities that include marketing production within the region of interest and marketing affordable and available land to farmers in Southern Ontario.

In light of these challenges, there are some indicators that are proving positive for agriculture in Algoma. One indicator is a growing global market for beef, where Algoma will have a significant advantage. On average, prices for steers and heifers have been going up for Ontario beef producers, which is positive with the opening of new foreign markets (i.e. Comprehensive Economic Trade Agreement with Europe). “European concessions will give beef producers a new \$600-million market, and pork producers \$400-million, producers’ associations say. The increase for pork, notably, will benefit Quebec and Ontario farmers” (Clark, Cousineau, Morrow, & Waldie, 2013). Another positive indicator is the growing Mennonite and Amish community in rural Algoma that have contributed to expanding the farmers’ market in Johnson Township and Iron Bridge.

According to a study by Nelson and Stroink (2013), there exists a community-based food system along with a mainstream commodity-based food system that are co-evolving in an environment that is demanding access to more local healthy food. Much of this community-based food system consists of relationships between organizations, businesses, producers and communities. Efforts for more local food have taken shape in Algoma with ‘Buy Algoma. Buy Fresh.’ a brand for local products (www.buyalgoma.ca), farmers’ markets, and businesses such as Penokean Hills Farms, a local group of beef farmers that sell premium beef into the local market (www.localbeef.net). A growing trend is an increase in market gardeners that are selling into the local market through Community Supported Agriculture, an approach to marketing vegetables where customers get a weekly share of produce. Field

vegetables and potatoes have accounted for over \$1 million in farm cash receipts in Algoma (2012), which is a significant market opportunity.

In the Northern Ontario Growth Plan, the Province has called for industry, government, and communities to expand a sustainable local food source for Northern Ontario residents (Ministry of Infrastructure, 2011). The Growth Plan (2011) calls on the Province, industry, and partners to grow and diversify agriculture in the following ways:

- Expand production in the North to contribute to a sustainable local food source for Northern Ontario residents.
- Support buy-local initiatives that increase consumer awareness of Ontario-produced foods and encourage Ontarians to buy locally, including Northern Ontario products.
- Support development of production, processing and distribution systems.

In addition to agricultural production, fish and forest food sources are a part of the local food system in the region, which are essential to many First Nations people in the North. Two-thirds of the landmass of Northern Ontario is traditional territory of First Nation peoples through Treaties 3, 5, 9 and Robinson-Superior Treaty; Aboriginal people comprise approximately 20% of Northern Ontario's population (Nelson & Stroink, 2013). According to Nelson and Stroink (2013), mining and forestry management practices and northern policies have placed tensions between increasing local food sources and extraction resource industries (accompanied with long term soil, water and air toxic contamination).

2.2 Agricultural Research in Algoma

In addition to the Algoma-Manitoulin Agricultural Economic Sector Profiles (2006 & 2009), agricultural research has been conducted by local organizations, government, NORDIK Institute and the Sault Ste. Marie Innovation Centre since 2006.

NORDIK Institute has undertaken a number of projects through a five-year research grant on the Social Economy called Linking Learning Leveraging. The project comprised multiple community partner organizations, academic researchers and university students across Saskatchewan, Manitoba and Northern Ontario (<http://usaskstudies.coop/socialeconomy/>). A number of research projects were led by NORDIK Institute and the Community Economic and Social Development Program out of Algoma University. These projects, which mainly focused on marketing of local food products, consisted of the following studies:

- Community Supported Agriculture (CSA): Putting the "Culture" Back into Agriculture (Fernandez, Mayhew, & Tarantini, 2006).

- Business Analysis Case Study of Penokean Hills Farms (Broad & Lawrence, 2010).
- Market Analysis of Local Lamb and Chevron in Sault Ste. Marie (Thompson, 2012).
- Expanding Locally Sourced Beef in Northern Ontario through the Co-operative Model (Thompson, 2012).

NORDIK Institute has made considerable strides with marketing local food and agriculture; contributing to the development of the Algoma Food Network, Penokean Hills Farms, Community Supported Agriculture (CSA) and branding local food through the “Buy Algoma Buy Fresh” local farmers’ directory (www.buyalgoma.ca). NORDIK’s role in building relationships has strengthened the agricultural sector in Algoma through launching new ventures (CSA farms, Penokean Hills Farms) and the education of consumers.

The Sault Ste. Marie Innovation Centre (SSMIC) has also conducted research on the viability of oilseed and fibre crops for biofuel and other oils in Algoma District. This work has been supported by the merger of science enterprise Algoma (seA) with the SSMIC in 2009. With a focus on oilseed and biofuel crops, the following reports were completed:

- Report to Oilseed-Biofuel Cooperative Steering Committee (Natural Capital Resources, 2011).
- Waste Vegetable Oil Survey Report (MacLeod, 2009).
- Algoma Biomass Inventory Report (MacLeod, 2009).
- Economic Assessment of Potential for Sustainable Production and Processing of Oilseed and Fibre Crops in the Algoma District (Natural Capital Resources, 2009).

Research by the SSMIC has contributed to greater knowledge of the feasibility of energy crops in Algoma. SSMIC has been working with rural partners to identify alternative crop opportunities and assess their growth performance under local conditions. Crops targeted have included both agricultural and woody biomass, oilseeds, fibre crops and we have developed some of these in partnership with the private sector as well as local farm organizations. This research has been useful in determining the feasibility of a local oilseed crushing facility that is now operational. With cooperation and support of these organizations as well as rural municipalities the SSMIC and NORDIK Institute have partnered in the development of a Rural Agri-Innovation Network (RAIN) to facilitate rural economic diversification and development in Algoma District. Projects undertaken via the RAIN will be of potential value to others from other districts in Northern Ontario. Past efforts have included crop trials with hemp, flax, soybean, camellina, alder; agronomic and economic assessments for oilseed production and processing in Algoma; feasibility analysis of an oilseed to bio-diesel co-op in Algoma, and an Algoma forest and agricultural biomass inventory.

This breadth of research has propelled both the NORDIK Institute and the SSMIC to form the RAIN, which will continue research efforts for agriculture in Algoma. In addition, several crop trials have been undertaken through the Algoma Soil & Crop Improvement Association and David Trivers from the Ontario Ministry of Agriculture & Food. Previous crop trials include:

Table 1.1 - Historical Algoma Crop Trials (Source: David Trivers, OMAF)		
Year	Trial(s)	Region
2008	Reed Canary Grass Plots – Two test sites (Huron Shores and St. Joseph Township) with three replicates	Huron Shores & St. Joseph Township
2008	Grain corn variety trials (17 varieties)	Huron Shores & Laird Township
2005	Biomass assessment on speckled alder plot	Huron Shores
2005	No-till grain test plot, forage variety trial, canola variety trial, wheat & oat variety trial and barley variety trial	Algoma
2004	Canola variety trial, fall wheat variety trial, soybean variety trial, barley trial, wheat trial and oats trial	Algoma

2.3 Overview of Existing Projects

2.3.1 Crop Rotation Options for Canola Production in Algoma District (Phase One Completed)

The production of canola and other oilseeds in the Algoma District has been relatively limited as a result of a combination of socio-economical and environmental limitations. The presence of Cook's Station Corp. in Algoma is expected to serve as the socio-economical driver of change in the current practices used by most farmers. As such, this project aims to address environmental issues and options for agronomic sustainability. Growing monocultures consecutively year after year in the same field leads to major yield losses due to nutrient depletion and pathogens that accumulate. As such, crop rotations arose as one of the first attempts to make agriculture both more productive and sustainable. The research will provide further insights on the best rotation crops and rotation sequences for maintaining the highest possible soil and crop productivity strictly from a soil biota perspective.

The project aims to determine best management practices to increase the productivity of soils to be used for canola production. Although the mineral nutrient requirements for most crops grown in Ontario are well-known, the contribution of natural soil microbial mutualisms to those requirements, despite being considered highly significant, remains largely unknown and is never considered as a factor in management guidelines. This the first phase of the project undertook greenhouse trials to determine: 1) best crop varieties to grow in Algoma; and 2) rotational sequences that maximize soil fertility and soil

microbial plant growth promoting effects. The research planned will provide information on crop rotation (agronomic and ecological system) options suitable for Algoma soils. The goal of this project is to use a simple but effective approach to assess rotation sequences appropriate for Algoma, although the soils tested and results will be valid for other parts of the Province. This was done simultaneously under controlled environment conditions over the course of the project timeframe. The second phase of the project, scheduled to begin in spring 2014, will consist of conducting field trials to determine the optimum crop rotation sequences. It is anticipated that information gathered through this research will be included in management guidelines, which currently only consider crop nutrient requirements and not how a particular crop modifies the soil biota for the next crop. Until results are confirmed in field trials, any results are considered preliminary and not yet suitable to making grower recommendations. The first phase of this project was administered by RAIN with Algoma University researcher's Dr. Pedro Antunes and Dr. Teresa Dias with support from the Canadian Agricultural Adaptation Program (CAAP) and Agriculture & Agri-Food Canada (AAFC).

2.3.2 Crop Performance and Production Analyses for Purpose Grown Biomass in Algoma District

The Agricultural Biomass project aims to determine the potential productivity and costs associated with purpose grown agricultural biomass crops in the Algoma District. Some information exists for other northern Ontario regions, but soil and climatic conditions differ with Algoma having more moderate winters and increasing crop heat units. The Algoma District has approximately 30,000 acres of land that could potentially be accessed for biomass. This could create significant sustainable revenue and employment for Algoma landowners, but more information is required on production costs, biomass productivity and other issues before Algoma's true biomass production potential can be determined for the crops proposed. Four biomass crops are considered in this study: reed canary grass, miscanthus, switchgrass and woody biomass (hybrid poplar). Reed canary grass likely has the best opportunity for success in Algoma as growth and yield have been proven and demonstrated in northern Ontario. Miscanthus has also been tested in northern Ontario with variable success, but has not been tested in Algoma. No local field trials have demonstrated Switchgrass growth, but some trials in other northern regions indicated moderate growth potential. Crops to be field tested in this project include reed canary grass (primary focus), miscanthus and switchgrass. Two demonstration sites have been selected in the Echo Bay and St. Joseph Island area. The first year of the project focuses on crop establishment costs and observations on crop emergence and survival data. A literature review of crop agronomy and economic analysis for all four potential biomass crops is currently being completed. This

project was administered by the RAIN with support from the Canadian Agricultural Adaptation Program (CAAP) and Agriculture & Agri-Food Canada (AAFC).

3.0 Research Methods

In 2013, a variety of research methods were used to get input from the farming community through various information sessions and a survey. Along the same schedule, Conestoga-Rovers & Associates (CRA), in association with CG Trivers Ltd. (Trivers), was retained by the Rural Agri-Innovation Network (RAIN), Sault Ste. Marie Innovation Centre, and NORDIK Institute to undertake an Agricultural Engineering Analysis and Development Strategy (Study) for agricultural tile drainage and storage infrastructure in the Algoma District. In its development, the Agricultural Engineering Analysis and Development Strategy comprised of significant correspondence with farmers, processors, the Ontario Soil & Crop Improvement Association and Ontario Ministry of Agriculture and Food.

3.1 RAIN Research Agenda Information Sessions

Between April and May 2013, the Rural Agri-Innovation Network (RAIN) staff led a series of community consultations to gather producer feedback on the RAIN Research Agenda. This feedback has developed a larger understanding of producer strengths and weaknesses so that RAIN staff can develop the RAIN Research Agenda. The sessions also uncovered the various opportunities and threats that local producers have perceived.

The four sessions consisted of a brief introduction to the RAIN project, an exercise to determine crops that are of interest and an exercise to identify strengths, weaknesses, opportunities and threats (SWOT analysis). For each session, RAIN staff posed the following questions:

1. What crops would you like the RAIN Research Team to explore at the RAIN Research Facility?
2. What are the roadblocks hindering your farm or business from creating better products or services (weaknesses and threats)?
3. What are the strengths of Algoma's agriculture community that can be used to propel us forward (strengths)?
4. What are the opportunities that will benefit Algoma's agricultural sector (opportunities)?
5. What crops would you like the RAIN Research Team to explore at the RAIN Crop Trial Facility?

Each question was answered in a format that elicited conversation in small groups. Every participant was encouraged by RAIN staff to write down a strength, weakness, opportunity or threat on post-it notes. All of the items mentioned were then tabulated into a summary of the sessions (see Appendix 1). The sessions attracted 78 producers with an average 16 producers at each session. The sessions with the most producers were Desbarats (32) and Huron Shores (32).

3.2 RAIN Research Agenda Survey

RAIN staff also distributed a survey to acquire more stakeholder responses to incorporate into the RAIN Research Agenda. The basis for the survey was to develop a situational analysis on strengths, weaknesses, opportunities and threats (detailed in section 4.0 of the Research Agenda). The following questions were asked:

1. What is your involvement in Algoma's agriculture sector?
2. If you are a producer, what do you raise, grow or produce?
3. In your view, what obstacles do producers in Algoma share (choose your top 5)?
4. What are the greatest strengths that producers in Algoma share (choose your top 5)?
5. What are the greatest threats to farming in Algoma (choose your top 5)?
6. What are the greatest opportunities for farming in Algoma (choose your top 5)?
7. What crops would you like the RAIN Research Team to explore at the RAIN Crop Trial Facility?

Options were given, including strengths, weaknesses, opportunities and threats that were observed during the town hall sessions or that were observed in the RAIN Terms of Reference (for the detailed survey with options, see Appendix 2). The survey was distributed through RAIN's existing contact database developed through information sessions, workshops and the RAIN symposium. The survey collected 44 responses from producers in Algoma District.

3.3 Tile Drainage and Storage Information

Improving land drainage is integral to improving the infrastructure necessary to support greater cropland yields and financial opportunities. This Study is an engineering study that also serves as a strategic plan for encouraging tile drainage installation for increased cash crop and other crop diversification opportunities in Algoma. This Study investigated:

- Locations of currently drained lands within Algoma and priority ranking of lands that would benefit from tile installation.
- An economic assessment of likely costs and benefits associated with tile drainage installation.
- Options for reducing the costs of tile installation (financing programs and opportunities to collaborate with other growers).

This Study is intended to compile and assess local data and demands in an effort to strengthen the local agricultural economy. As part of the Study, drainage surveys were sent to farmers within the Algoma District through a series of venues, which included mail-outs to those registered as farmers

within their respective townships, newsletters, articles, community group meetings, email alerts, poster advertisements, and RAIN presentations and networking sessions. Of the 317 farmers registered within the Algoma District, 83 farmers representing 166 farms responded to the survey (approx. 25 percent return rate), which identified the need for at least 2,017 hectares (4,983 acres) of land drainage improvements (Tile Drainage Survey has been attached as Appendix 3). Feed storage upgrades required to support existing and future needs also were identified within the survey.

4.0 Research priorities

4.1 Situation analysis of agriculture in Algoma

The external situation analysis (SWOT analysis) was generated from community sessions and the RAIN Research Agenda survey that elicited 44 respondents. The analysis identified major themes that emerged from RAIN Information Sessions and follow up survey, which was conducted between Apr-June 2013.

Barriers to agriculture development in Algoma (obstacles and threats)

During the sessions, participants identified the barriers that inhibit them from making their farm business successful. The following major themes were identified:

Lack of on-farm infrastructure: On-farm infrastructure, such as storage, tile drainage and equipment was identified as a significant barrier. This discussion is explored further in the RAIN Agricultural Tile Drainage & Storage Infrastructure Report with feedback from Algoma producers.

Weather and climate: Colder weather and a shorter growing season inhibit farmers from attempting to grow certain crops that are profitable in other parts of Ontario. In 2013, significant flooding events have impeded crop success where little tile drainage systems exist. This is in comparison to 2012 - a drought year that affected crop production.

Lack of markets: Distance from larger markets and access to markets is another barrier for farmers in Algoma. It was noted that marketing local products takes a large degree of co-operation and resources to be done effectively. Farmers are interested in how the cattle sale can draw a greater number of buyers to increase competition.

Table 2.1 - Farm Profile of Survey Respondents		
Where in Algoma Are You From?	Response %	Response Count
Sault Ste. Marie /Prince Twp.	14%	6
Echo Bay/Sylvan Valley	5%	2
Bar River/Laird	5%	2
Desbarats	14%	6
St. Joseph Island	21%	9
Bruce Mines/Plummer	17%	7
Thessalon/Huron Shores	24%	10
What do you raise, grow or produce?		
	Response %	Response Count
Oilseeds	3%	1
Cereals	11%	4
Forages/hay	40%	14
Beef	28%	10
Pork	14%	5
Chicken	36%	13
Lamb/goat	22%	8
Produce	53%	19
Maple Syrup	28%	10

Farm succession: The combination of aging farmers and a disengaged youth population in the farming profession has attributed to a need for farm succession amongst growers. Whether it is attracting new farmers or engaging Northern youth to consider agriculture as a viable option; more research is needed to address this concern.

Government policies: There was significant feedback on certain government policies and agreements that have inhibited farm success. The most notable from the sessions was the supply management of poultry that puts quota limits on the number of poultry birds that can be processed in a year by smaller producers. Regulatory issues that were discussed include certain restrictions for selling local products at farmer' markets.

Rising input costs: the cost of fertilizer, fuel, seed and other inputs are a concern to local producers. It is also a concern that co-operatives in northern Ontario that supply farm inputs have shut down in recent years. The local Echo Bay Co-op Ag-Centre is seen as a strong community asset for continued bulk purchases that reduce input costs.

Table 2.2 – Survey Results: Obstacles and Threats

What are the greatest obstacles and threats to Agriculture in Algoma? (%) - % of total respondents (44) that selected the issue as an obstacle or threat

Top 5 Obstacles	Top 5 Threats
1. Distance to market (63%)	1. Aging farmers, limited succession planning (67%)
2. Short growing season (45%)	2. Rising input costs (feed, fertilizer) (67%)
3. Limited on-farm infrastructure (drainage, storage) (39%)	3. Lack of profitability (58%)
4. Limited processing infrastructure (livestock, crops) (30%)	4. Policies that exclude small farmers (49%)
5. Access to financing for start-up (30%)	5. Rising energy costs (47%)

The greatest obstacles and threats for beef and hay producers indicated the following were their greatest obstacles and threats: distance to market, limited on-farm and off-farm infrastructure for processing/storing crops and limited drainage infrastructure. This analysis is further explored in the Agriculture Tile Drainage and Storage Study. Beef and hay producers indicated that limited succession planning, rising input costs, lack of profitability and wildlife (i.e. elk and deer) were threats.

Opportunities for farming in Algoma

During the sessions, producers indicated the following opportunities and strengths that will enhance the agricultural sector in Algoma:

Unique advantages of farming in Algoma (low cost of land and diversity) – it was identified that the low cost of land makes farming in Algoma attractive to new farmers when compared to farming in southern Ontario. Also, farm diversity is increasing in Algoma with more specialty products, including maple syrup, grass-fed beef, canola and an increase in market gardeners.

Local markets – local marketing of food was seen as a strong opportunity with an increase in farmers' markets, demand for local produce and meats and Community Supported Agriculture (CSA). Consumers in the local area have a growing interest in local products and additional activities are necessary to make food more accessible and available. This includes the efficient distribution of products, season extension, value added processing, and consumer education. The Northern Growth Plan also emphasizes support for buy-local initiatives to encourage Northern consumers to buy locally.

Co-operative development – the development of co-operatives isn't new to Algoma District. The Echo Bay Co-op Ag Centre has been a fixture within Algoma's farming community for many years. Other co-operatives that have developed across Ontario in recent years have been in response to an increased demand for local food (see Local Organic Food Co-ops Network <http://cultivatingfoodcoops.net/>). Other examples of co-ops that have developed occur when growers recognize needs for capital infrastructure (i.e. storage, drying or processing). With grower needs presented, co-operatives have an ability to fill gaps that exist.

Youth engagement – as mentioned in the Terms of Reference, youth engagement in agriculture was highlighted as an opportunity to get more youth interested in the agricultural sector.

Improving processing infrastructure – upgrading processing infrastructure is another opportunity growers have identified. Processing meat, vegetables and other local products are essential to add value to agricultural products. Processing infrastructure includes abattoirs, flash freezing, maple syrup processing and crop processing (seed cleaning, pressing and preservation).

Table 2.3 – Survey Results: Strengths and Opportunities

What are the greatest strengths and opportunities to Agriculture in Algoma? (%) - % of total respondents that selected the particular issue as strength or opportunity

Top 5 Strengths	Top 5 Opportunities
1. Low cost of land/lower taxes (91%)	1. Marketing / raising awareness about local products (79%)
2. Local markets (farmers' markets, supporting local economies) (67%)	2. Popularity of niche market products (63%)
3. Farm diversification (44%)	3. Value-added processing (58%)
4. Agricultural entrepreneurship (44%)	4. Opportunities for organic production (45%)
5. Fertile soil (30%)	5. Co-operatives for farm inputs or outputs (37%)

Opportunities for Crop Research

Through the grower community sessions and the distributed survey, there were a number of producers interested in testing fruit crops, forages, specialty crops and cereals. Hardy fruit crops that do well in Northern climates were of particular interest to local growers. Forages (alfalfa, tall fescue, clover) and cereals (wheat, barley, oats, rye, and corn) were of interest to livestock producers and other croppers. In addition, new specialty crops to this area (quinoa, amaranth and hemp) were also of interest to local growers. The grower sessions also highlighted that oilseed crops would also be of interest, as well as crops to be tested on tile drained lands vs. on non-tile drained lands. Crops such as vegetables, cereals and oilseeds largely benefit from tile drained lands; non-tile drained lands are more suited for forages or pasture.

As it relates to opportunities, additional infrastructure (i.e. drainage, processing and storage) would enhance a local producer's abilities to crop oilseeds and cereals. With more opportunities for infrastructure and diversification, the interest in testing these crops will grow. Shorter growing seasons also provide opportunities for trying new techniques such as high tunnels (hoop houses) for crops such as fruit, vegetables or cereals. Experimenting with crops under high tunnel has been practiced at New Liskeard Agricultural Research Station and could provide opportunities for research in Algoma. Rising input costs and energy costs also provide more incentives to try techniques that reduce the costs of productions. This may include applying new soil amendments, practicing no-till seeding, and other innovative approaches (i.e. regenerative agriculture or intensive rotational grazing).

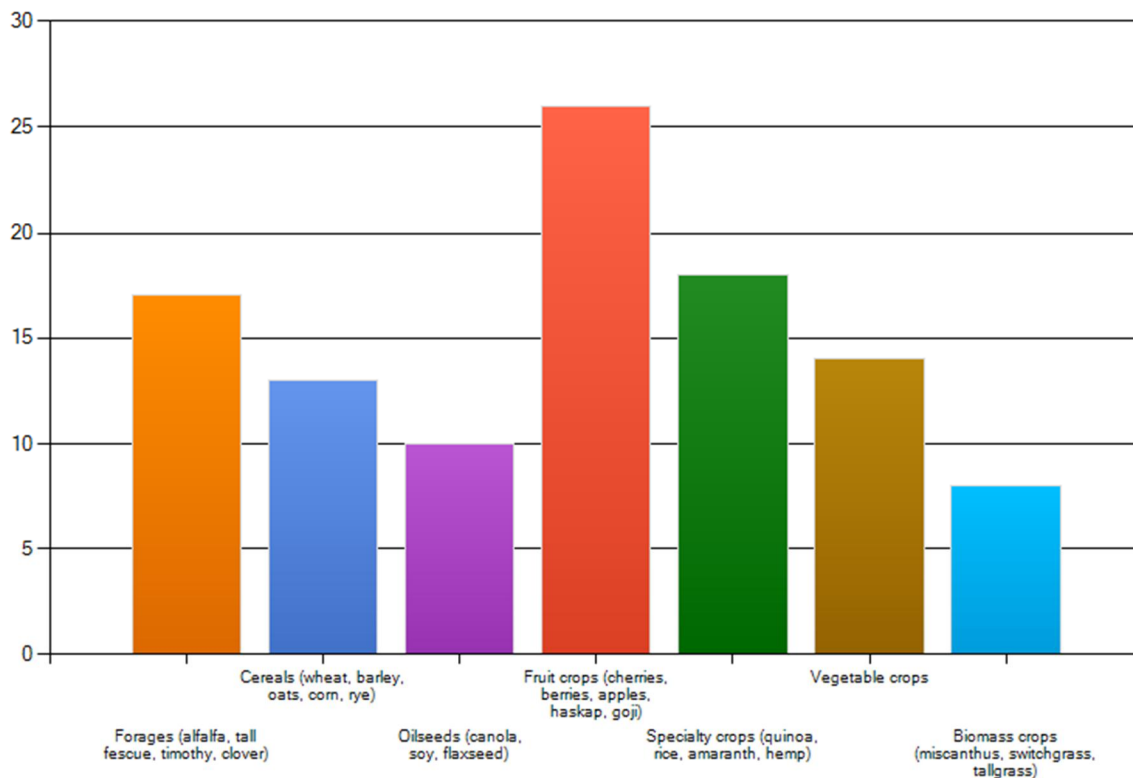


Figure 2.0 - Research Crop Producer Interest

Crops that a producer is interested in testing / researching (# of respondents)

Working groups

These sessions and surveys also identified potential working groups for exploring issues further. For example, a group of producers identified that co-op development for a local food distribution system was important to them. Other producers identified that grain storage was important for them to collectively pursue. These discussions were recorded and the themes have emerged from observations that were recorded by producers who attended the meetings as well as by RAIN staff.

4.2 Summary of research priorities and projects

Agricultural research for new crops and livestock diversification from a Northern perspective is critical in maintaining sustainability of the industry in Algoma. The RAIN Terms of Reference and 2013 research findings identified the following research priorities for the RAIN pilot project:

- **Diversification:** Northern fruit production and other diversification crop trials (testing crop varieties that would diversify current practice), which would include oilseeds and biomass crops.
- **Sharing best practices:** Research with a focus on pasture management, no-till cropping, cover cropping, forage and cereal production.
- **Market development:** Research and development that focuses on the coordination of agricultural services, markets for local food and agricultural products.
- **Infrastructure development:** There must be direct investments in infrastructure within individual businesses or through grower co-operation (infrastructure includes storage, tile drainage, value-added processing). The central focus in this effort is the RAIN Agricultural Tile Drainage and Storage Infrastructure study undertaken by Conestoga Rovers & Associates.

In addition to research priorities, the RAIN Terms of Reference and the 2013 research findings identified the following priorities that focus on business development, communications and other areas of concern:

- **Networking assistance and business development:** Capacity building needs to be developed through education, training of new technologies, knowledge and skills, technology transfer and awareness. New farmers and expansion projects need assistance with business planning.
- **Public outreach and communications:** A need to communicate the needs of Algoma growers, organizations and related businesses to the public, government, private sector and education sectors.
- **Resource and data collection:** Access to information in a variety of forms and on a timely basis, is a necessary component to foster innovation and bring best practices to the region.
- **Farm succession and recruitment:** Easing the transition of family farms to the next generation of farmers. Using the unique advantages of Algoma like low land costs to market the region's opportunities for agricultural development.

- **Government policy concerns:** Farmers have concerns on government policies that relate to meat regulations and its impact on small abattoirs, poultry supply management and wildlife control (Elk).

4.2.1 RAIN Research Projects

Diversification: RAIN has identified crops that are relatively new to Algoma District, which are of interest to farmers that want to diversify their cropping operations. In 2013, RAIN identified the following crops and projects through consultation with the growing community:

- **Northern Fruit Monitoring Program:** The Northern Fruit Monitoring Program aims to populate, analyze, monitor and maintain a geo-spatial database (GIS) of fruit production in northern Ontario. Utilizing the Plant Hardiness database and a web-based interface, producers will be able to see where fruit varieties have been successfully grown, what climatic conditions are suitable and how this may change under various climate change scenarios.
- **Specialty crop trials (Quinoa and amaranth):** Amaranth (*Amaranthus*) and quinoa (*Chenopodium*) are ancient grain crops that are grown for edible seeds. Both of these crops have a higher protein content than other crops (brown rice, potatoes, barley or millet), but is less than wild rice and oats. Quinoa is also a source of calcium, and is useful for those who are lactose intolerant (gluten-free). In 2013, a variety of quinoa was tested in cooperation with producer Peter Woolcott (Thessalon). Extremely wet field conditions made it difficult for the producer and research technician to harvest quinoa seeds.
- **Oilseed crop trials (Canola, camelina and soybeans):** Oilseed production in Algoma has been limited due to a combination of socio-economic and environmental limitations. There is a growing interest in oilseeds with the construction of Cook's Station, an oilseed crushing facility that will require 5,000 tons of canola seed per year to fulfill its capacity. Maximizing local production requires research for optimum rotation and crop management prescriptions (i.e. fertilizers, soil amendments) within Algoma soils and climate in addition to infrastructure improvements (tiling, storage).
- **Biomass crop trials (Miscanthus and switch grass):** In 2013, two research plots for miscanthus, switch grass and reed canary grass were established at two locations (Massey Acres in Echo Bay; Paul Down Farm on St. Joseph Island). The newest variety of miscanthus (*M. Nagara*) has shown exceptional growth in the first growing season in comparison to *miscanthus giganteus*

(commercial variety). The project will address knowledge gap on winter hardiness, rate of rhizome spread and seed viability of the two varieties under Algoma climatic conditions.

Sharing best practices: RAIN has identified useful agricultural practices that used sporadically in Algoma. Intensive rotational grazing is one such practice that RAIN will feature through the Algoma Pasture Improvement Project. Other best practices include seeding cover crops and trying different varieties of forage and cereal crops for local producers.

- **The Algoma Pasture Improvement project:** This project aims to increase the uptake of best practices for livestock management in northern Ontario. This will include the demonstration and assessment of no-till seed drilling on pastures, enhanced soil health amendments, and intensive rotational grazing. The project aims to build the capacity of farmers that are championing intensive rotational grazing. An economic modeling analysis will be undertaken in order to understand the costs and benefits of different grazing practices.
- **Cereals (Fall rye and winter wheat):** A crop of fall rye and winter wheat were planted with a grower co-operator in October 2013.

Market development: RAIN aims to undertake market research that will assist local producers.

- **Local Food Consumer Research Study:** RAIN staffed a Local Food Research position to conduct survey research with Algoma consumers to bridge the gap between food producers and local markets. The research will identify consumer preferences/needs for local food products and increase consumer awareness about local foods with the goal of increasing access to, sales and production of local food in Algoma.

Activities

1. Literature review (research on local food preferences, definition of “local”, food access)
2. Survey development & testing
3. Surveys with consumers regarding barriers to local food procurement – identify barriers
4. Focus groups with consumers, restaurant owners/managers, and retail owners/managers to identify barriers to sourcing local in Algoma

Outcomes

1. Market local food while conducting research (handing out directories)
2. Identify barriers to sourcing locally, and whether this requires policy changes, transportation options, or increasing products offered locally.
3. Use the research to develop a strategy to get more locally produced food purchased in Algoma

4.3 RAIN Theory of Change

A theory of change (or logic model) is a framework developed by Martin Quickly, used to evaluate the effectiveness of a program. The underlying purpose is to assess causal relationships between the elements of a program.

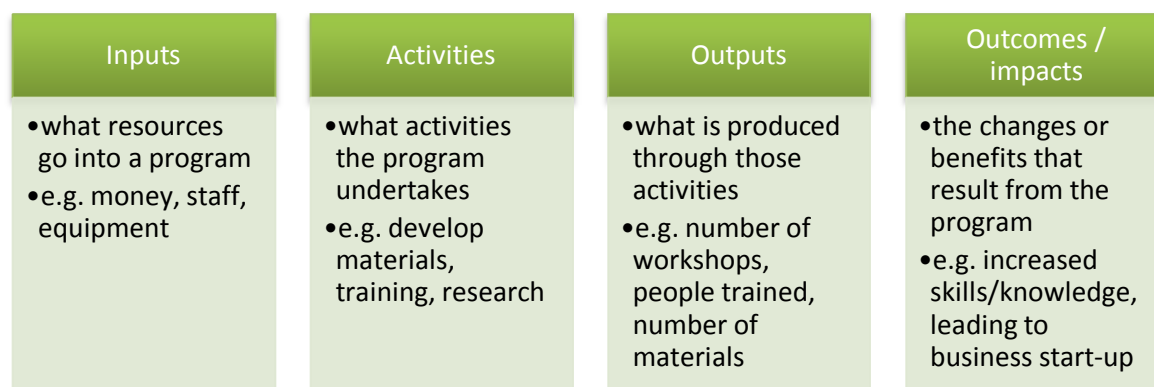


Figure 3.0 - Logic Model Example

If resources are available for a program, then the activities can be implemented, if the activities are implemented successfully then certain outputs and outcomes can be expected.

The RAIN aims to increase the abilities of Algoma agri-businesses and producers to become more successful in: developing opportunities, marketing products and services, starting a new ventures or expanding existing ventures, and networking, sharing information and communicating.

RAIN will achieve these outcomes after the 3 year pilot project by accomplishing the following outcomes through the following logic model:

Outcomes	Activities	Outputs
Producers have improved their abilities to develop and realize opportunities	RAIN will hire a consultant who will identify opportunities for developing agricultural infrastructure in Algoma. Consultant will collaborate with RAIN to disseminate information. RAIN will advocate for funding programs to assist producers and will facilitate development of a grower consortium(s) or program to facilitate development.	Tile Drainage and Storage Infrastructure Study that identifies the number of acres and number of farmers that requires tile drainage and storage. Another outcome includes the number of producers that undertake infrastructure development as individuals or as a consortium of growers.
	RAIN staff in collaboration with appropriate faculty and partners will develop research questions that are pertinent to RAIN Research Priorities and implement research methods in order to record findings and disseminate information to the agricultural community.	Conduct projects that align with RAIN's research priorities. Deliver research projects that focus on diversification, best practices and infrastructure development.

Producers have improved their abilities to market products and services	RAIN staff will develop research questions; implement methods for surveying and conduct focus groups; record findings; and will disseminate information to the growing community.	A Local Food Consumer Research Study that identifies the barriers for consumers to source local food in Sault Ste. Marie.; as well as promote sources of local food in the city. Specific outputs include the number of consumers surveyed, reached and engaged through the project.
	RAIN Marketing Specialist will assist producers and agri-businesses with their marketing activities. Activities will consist of assisting producers with marketing plans, social media, creating marketing materials and providing one-on-one assistance.	Producers and businesses use RAIN's market development services to improve their market exposure through 'Buy Algoma. Buy Fresh.' or Eat Algoma (local food festival). Other outcomes include the number of consumers that utilize 'Buy Algoma. Buy Fresh.' brand. Number of farmers/agri-businesses that RAIN helps access new markets through business plans, funding applications and market research.
	Assist in the development of co-operative ventures for marketing products and services; storing crops; and processing animals or crops.	A committed group of members (producers or consumers) that establish or expand one or more co-operatives for selling, storing, distributing or processing agri-food products. ¹
	Host workshops on marketing, social media, market research and marketing plans.	Number of producers and businesses that participate in workshops.
	Host events that market local agricultural products.	Number of consumers that participate or attend events that RAIN partners in.
Producers have improved their abilities to start new ventures or expand existing ventures	Assist farmers and agri-businesses with business planning, marketing plans and funding applications to start a new farm/business or expand their existing farm/ business.	Number of farmers/agri-businesses that expand or start their business with RAIN's assistance.
	Work with funders, banks and other partners to establish sources of financing for starting new ventures or expand existing ventures.	A fund that assists farmers with establishing a new venture or expand their existing venture.
Producers have improved their abilities to network, share information and communicate	Host events that bring together farmers, businesses, researchers and regional stakeholders to network and share information.	Number of people who attend events from different sectors.
	Create and maintain a website dedicated to sharing agricultural related information that pertains to Algoma District and Northern agriculture.	Number of social media interactions and number of website interactions that are engaged (users who sign up for newsletter or use social media).
	Create a biannual RAIN newsletter that will be sent to farmers and agri-businesses in the area.	Number of subscribers to the newsletter, which will be through RAIN's membership.

¹ Outcome is largely dependent on member involvement. RAIN will be involved to the extent of assisting groups move ahead on initiatives that may include applying for funding or undertaking analysis of feasibility.

5.0 Internal situation analysis of the RAIN

Table 4.1 - RAIN SWOT Analysis	
<p>Strengths</p> <ul style="list-style-type: none"> • RAIN's skilled staff have been moving several projects ahead while initiating new projects within the RAIN pilot with faculty and students • Events up until this point have been well attended by the farming community and have received excellent feedback; RAIN has learned to work with associations to partner on events for increased attendance • RAIN deliverables are being met for the first year of the pilot project • RAIN's research projects in 2013 have showed positive results; the results are being communicated with the grower community • RAIN has assisted a number of farm businesses with funding applications • The RAIN tile drainage and storage study has been a positive development with a strong representation of local farmers • RAIN has been a strong advocate for farmers in the District through outreach, the Buy Algoma. Buy Fresh. brand, and advocacy • RAIN's precision no-till research seeder and weather station has provided opportunities for producer involvement and data dissemination 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Sustainability of RAIN past the three year pilot is RAIN's major weakness • RAIN Research Facility in Huron Shores is not been fully utilized due to wet field conditions, delays for installing tile drainage and delays for the arrival of equipment; has resulted in a reduced number of research experiments undertaken in the first year of the RAIN pilot project • Feedback on research opportunities from larger growers has been limited • Delays in communications has been delayed with the launch of RAIN's website • Eat Algoma, a fundraising event for RAIN was postponed from this year to June 2014 • Efforts to bring about a pan-Northern network for agricultural research has been stalled due to other commitments at the local region • RAIN's research experiments will require additional funding for harvesting and seed sorting.
<p>Opportunities</p> <ul style="list-style-type: none"> • New funding programs have been announced through Ontario Ministry of Agriculture and Food (OMAF) and NOHFC which RAIN will focus on with stakeholder support • RAIN has submitted three major funding applications to FedNor, Growing Forward 2 and New Directions • A number of grower cooperators have identified lands where research experiments can take place • RAIN membership and event fundraising has been considered as two key opportunities for raising funds and providing benefits – funding programs are being explored to conduct a sustainability plan for the organization • Opportunities exists for renting out the no-till equipment; a trailer is being considered for purchase • RAIN staff have identified fee-for-service activities to be provided to local growers; these require further assessment 	<p>Threats</p> <ul style="list-style-type: none"> • It's unlikely that tile drainage will be installed at the RAIN Research Facility in 2013; this is concerning with 2014 as year 2/3 of the pilot • Sustainability of RAIN after the pilot period is a concern that may stem from a lack of developed extension services, funding for research or producer support • Not being successful on funding applications that have implications for sustainability past year 3 of the pilot project • Discontinued support for RAIN from the rural communities due to lack of funds (past year 3) • It will be difficult to start new projects with a lack of start-up funding to leverage additional funds

Since the creation of the Terms of Reference, both SSMIC and NORDIK Institute have gathered support for the RAIN from local producers, businesses and government funders (including Northern Ontario Heritage Fund Corp, Ontario Trillium Foundation and FedNor). These stakeholder organizations and funders have continued to be involved through RAIN's Advisory Committee that has assisted in giving direction to its research priorities. The pilot funding covers the period from January 2013 to the end of December 2015. Funding to date includes: Ontario Trillium Foundation \$81,000, NOHFC \$262,750, FedNor \$262,750, RAIN partners \$112,000. Funding for research and other projects received or under review are detailed in the financial section which follows.

Table 4.2 - RAIN Funding Deliverables		
Ontario Trillium Foundation Deliverables	To be completed by	Percent completed
Deliver five training workshops for producers (social media, equipment calibration, co-operative development, season extension technology, pasture improvement).	Completed	100%
Develop a RAIN Research Agenda (includes conducting five information sessions and focus groups) that will identify priority research projects	Dec 31, 2013	85%
Deliver five training workshops for producers for the rest of the pilot project	Aug 30, 2015	0%
Complete a sustainability plan to continue RAIN beyond the 3 year pilot	Aug 30, 2015	0%
Disseminate research results through community sessions	Aug 30, 2015	Ongoing
FedNor and NOHFC Deliverables		
Selection of research project manager and research technician: David and Saul started Feb 4 & Apr 22	Completed	100%
Development of a RAIN research program (Research Agenda): Consultation phase complete; report writing underway	Dec 31, 2013	85%
Planning/construction of test facility and land preparation: Building constructed; site to be tile drained in Fall	Dec 31, 2013	90%
Start-up of priority research projects: Projects are in planning stage of development; applications to funders have been submitted for additional research funding	Dec 31, 2013	85%
RFP for Drainage Study and Completion of Report: Conestoga Rovers is preparing a final report and community presentations	Dec 31, 2013	80%
Installation and monitoring of research plots: Spring planting was delayed; fall crops have been seeded with farm cooperator	Aug 30, 2015	Ongoing
Preparation / dissemination of research results	Dec 31, 2015	Ongoing

Table 4.3 - Research and Development Projects 2013/14		
Project	Status	Funder/Total Project Cost
Canola Crop Rotation Research	To be completed Nov 2013	CAAP/AAC - \$107,700
Agricultural Biomass Study	To be completed Nov 2013	CAAP/AAC - \$46,900
Forbes Wild Foods Feasibility Analysis (NORDIK Institute)	To be completed Dec 2013	Community Futures Development Corp. and Forbes Wild Foods - \$5,000
Local food research	Funded Oct 2013-Oct 2014	MTCU/JCP - \$29,199
Microgrant program for value-added products in the North	Phase Two Submitted Oct 2013	FedNor - \$355,000
Algoma Pasture Improvement Project	Proposal Submitted Oct 24, 2013 Ends March 2016	Growing Forward 2 \$164,700
Northern Fruit Monitoring Program	Proposal submitted Oct 2, 2013	New Directions - \$38,500
Invasive Assessment for Miscanthus Agricultural Biomass Production	Proposal submitted Oct 11, 2013	Invasive Species Centre \$20,000

5.1 RAIN staff

The RAIN project staff work alongside collaborators to undertake research, build relationships and capacity for producers of agricultural goods in the Algoma District and Northern Ontario. Our team is composed of specialists with backgrounds in business, agriculture and food science, forestry, and marketing.

Errol Caldwell, RAIN Co-Chair and Research Director Sault Ste. Marie Innovation Centre

Gayle Broad, RAIN Co-chair and Research Director of NORDIK Institute

David Thompson, RAIN Research Project Coordinator

Katie Fillion, RAIN Market Development Specialist

Saul Fraleigh, RAIN Research Technician

Janette Wallace, Marketing Intern with Penokean Hills Farms & RAIN

Erin Heeney, RAIN Local Food and Research Coordinator

For a full team profile, see <http://rainalgoma.ca/about/team>

6.0 Conclusion

In 2014, it will be critical to have an established location where RAIN can conduct its research experiments on specialty, oilseeds and forage crops. A few cooperators and properties have been identified for these experiments; it will be critical to have properly drained soils and an agreement between landowners and the RAIN. The Community Pasture site where the RAIN facility is located is insufficient for ongoing needs. Therefore, RAIN staff will need to identify alternatives that are in proximity to the current facility or to Laird & Echo Bay. Other priority research projects in 2014 include the Algoma Pasture Improvement Project (funding pending), the Local Food Consumer Research Project (funding confirmed), Northern Fruit Monitoring Program (funding pending) and Invasive Assessment for Miscanthus Agricultural Biomass Production (funding pending).

Sufficient resources will be needed in order to reach outcomes in RAIN's logic model. This includes human resources (staff, volunteers, faculty), capital (land, equipment) and additional financial resources for administration, overhead and IT support. Within the 3-year pilot project, sufficient resources exist, but additional research funding is necessary to cover additional costs that arise. After the third year of RAIN's pilot phase, the sustainability of RAIN will become critical. Increasing RAIN memberships, fundraising activities and research project activities will be critical factors to RAIN's sustainability in 2014. Monthly strategic planning meetings have identified areas that can support financial sustainability for the RAIN:

- RAIN membership will have benefits for producers connected to the RAIN and will provide the RAIN with fees to collect. Benefits include receiving a quarterly electronic newsletter, exclusive content on RAIN's website and reduced fees for events.
- Fundraising for RAIN will take place through the Eat Algoma food festival in June 2014. This event aims to fundraise over \$5,000 towards RAIN research projects in the first year. RAIN staff is also planning farm harvest dinners that would be located on farms in the fall. Eat Algoma has been successful in retaining sponsorship funds from 2013.
- Additional research funding for projects will also be of importance in 2014, which may have implications for extending the RAIN project into its fourth year. With over \$575,000 in funding requests that are pending, it will become clearer at the end of 2013 if additional research funding will be pursued.

- If approved, the microgrant program (with FedNor) for value-added products in the North will demonstrate RAIN's capabilities to deliver pan-Northern projects that will have positive future implications for additional funding.

RAIN requires a significant source of ongoing funds for its core funding which is estimated at \$200,000 per year. Project funding may provide some funds for continued operations, but additional funds would be needed to sustain RAIN's ongoing work. Fundraising will cover a portion of these amounts and can be considered as supplementary. It is recognized that farmers cannot contribute for RAIN's operations overall, but they will have some interest in purchasing services from the RAIN. In order to survive, RAIN must strike a state of balance for ongoing funds that comes from ongoing fundraising, service provision and project leadership.

In addition to meeting RAIN's outcomes, support from producers and stakeholders is needed so that they are participants in improving their abilities and acting on opportunities. Stakeholder support will be needed for increased tile drainage and storage improvements. This includes producers that are willing to join a consortium of growers that require infrastructure improvements and government agencies with programs that are amenable to agriculture infrastructure improvements. The results of the tile drainage and storage study can be put into action with the required co-operation from the public and private sector. Stakeholders must also be engaged on RAIN's advisory committee so that priorities are shared and evaluated with measurable goals. For the RAIN project to be successful, it will take RAIN staff, stakeholders and producers to be focused on a vision for a more sustainable agricultural sector in Algoma that benefits local producers and local partners in the value chain.

Bibliography

- Broad, G., & Lawrence, B. (2010). *Penokean Hills Farms: Business Analysis & Strategic Plan*. Sault Ste. Marie: NORDIK Institute.
- Caldwell, W., & Marr, E. (2011). *Strategic Directions for Agricultural Development in Northeastern Ontario*. Guelph: University of Guelph.
- Clark, C., Cousineau, S., Morrow, A., & Waldie, P. (2013, 10 18). *Ontario, Quebec seek aid for dairy sector as provinces back EU trade deal*. Retrieved 11 29, 2013, from The Globe & Mail: <http://www.theglobeandmail.com/news/politics/ontario-quebec-seek-aid-for-dairy-sector-as-provinces-back-eu-trade-deal/article14919483/>
- Fernandez, C., Mayhew, M., & Tarantini, B. (2006). *"Buy Local Beef" Marketing Study for Algoma Cooperative Livestock Sales*. Sault Ste. Marie: Algoma University.
- Harry Cummings and Associates. (2009). *Algoma-Manitoulin Agricultural Economic Sector Profile*. Guelph: Harry Cummings and Associates.
- MacLeod, R. (2009). *Algoma Biomass Inventory Report*. Sault Ste. Marie: Sault Ste. Marie Innovation Centre.
- MacLeod, R. (2009). *Waste Vegetable Oil Survey Report*. Sault Ste. Marie: science enterprise Algoma.
- Ministry of Infrastructure. (2011). *Growth Plan for Northern Ontario*. Retrieved June 17, 2013, from Places to Grow: <https://www.placestogrow.ca/images/pdfs/GPNO-final.pdf>
- Natural Capital Resources. (2009). *Economic Assessment of Potential for Sustainable Production and Processing of Oilseed and Fibre Crops in the Algoma District*. Sault Ste. Marie: Natural Capital Resources.
- Natural Capital Resources. (2011). *Feasibility Study, Business Plan and Governance Structure Planning for a Proposed Biofuel/Oilseed Cooperative in the Algoma Region of Ontario*. Sault Ste. Marie: Natural Capital Resources.
- Nelson, C., & Stroink, M. (2013). Northern Ontario. In I. Knezevic, K. Landman, A. Blay-Palmer, & E. Nelson, *Models and Best Practices for Building Sustainable Food Systems in Ontario and Beyond* (pp. 16-61). Guelph: Ontario Ministry of Agriculture, Food and Rural Affairs.
- Ontario Ministry of Agriculture & Food. (2012). *Northern Ontario Region at a Glance*. Retrieved 11 29, 2013, from Ontario Ministry of Agriculture & Food: http://www.omafra.gov.on.ca/english/stats/county/northern_ontario.pdf
- Thompson, D. (2012). *Expanding Locally Sourced Beef in Northern Ontario through the Co-operative Model*. Sault Ste. Marie: NORDIK Institute.

Thompson, D. (2012). *Market Analysis of Local Lamb and Chevon in Sault Ste. Marie* . Sault Ste. Marie: NORDIK Institute.

Appendix 1 - Information Sessions Event Summaries and Comments

April 18, 2013: Echo Bay Hall Attendees: 10

Crops of Interest (Ranked from most to least interest): Blueberries, oilseed, corn, vegetables, feed corn, forages (alfalfa), ginseng, potato, fruit (apricots)

Anchors (Barriers)	Winds (Strengths)
<ul style="list-style-type: none"> • Access to equipment • No farm succession • Canada Revenue Agency (CRA) • Policy (Southern Greenbelt Regime) • Government regulations • Tile drainage (lack of) • Business to business knowledge lag • Lack of profitability • Vacant land • Lack of municipal support • Wrong soil type • Weather • Cost of equipment • What crops provide an income? • Quota • Access to money • Growing season (short) • North American Free Trade Agreement • Time • Lack of markets • Access to markets • Lack of space • Custom operators • Labour (too expensive to hire local) • Lack of sunlight hours for labour • Demand for product 	<ul style="list-style-type: none"> • Commodity boards • Traceability • Conscientious consumers • Improve soils • Local abattoir • Diversifying crops • “Small” as a niche • Youth excited about local foods • Lower cost of living • Co-ops • Fertile Soil • Biodiversity • Ability to fix own equipment • Farmers’ markets • Local food movements • Social networks • Grassroots movements • Word of mouth to drive product sales • Lower land costs • Cleaner, “greener” • Recognized need for sustainability

April 24, 2013: Huron Shores Attendees: 32

Crops of Interest (Ranked from most to least interest): Peas, alfalfa, day-neutral strawberries, barley, quinoa, corn, timothy grass, sour cherries, grain (no-tile land), soybeans, canola, feed corn, winter wheat, spring wheat, oats, canary grass, ginseng, lavender, choke cherries, forages, vegetables, potatoes, apples, tall fescue

Anchors (Barriers)	Wind (Strengths)
<ul style="list-style-type: none"> • Age of farmer; • Too soon old, too late smart; • Capital costs of equipment; • Time + Transportation costs; • Up front input costs; • Marketing cost + expertise; • Decrease in population; • Market access for food; • Flooded or wet land; • Lack of political “clout”; • Lack of processing equipment (eg: clean veggies); • Weather; • Price of animal feed too high(need to have a facility to mix and grind fed on the north shore); • Healthy as opposed to mass produced; • Making choices collectively (marketed as a group); • ELK; • Access to farmland for pasture; • Commodity prices; • Local businesses (opposed to Farmer’s Markets); • Cost of tiling land is high not feasible; • Connect to the wisdom of the elders and experienced with new innovations; • Equipment replacement too expensive; • Connections with youth and community aiding – farmers/ farms; • Target market (local groups); 	<ul style="list-style-type: none"> • Cheaper land; • Sharing knowledge + resources; • Have fun; • Access to rail water for transportation; • Fewer pests of weeds; • Farmers markets; • Price beef back to prices 10 years ago; • Price grain rising; • Sharing resources (food coops; farming equipment); • Youth could do films; plays; • Community spirit; • Good climate; • Focus groups; • Youth forum (what are their needs); • Intergenerational (matching elders with youth); • Algoma health units mandate; • Healthy life styles; • More money focused on health issues as opposed to promoting case in hospitals; • Using arts to display reuse; • Reduce recycle to up cycle; • Less store packing and more bulk; • Use of educational (schools/ Universities); • Homeschoolers (menonite/armish); • Co-ops goal plank; • Water – wells drying up (hydro higher costs marketing); • More sheep/lamb marketing; • Buy local (encouragement); • Local food act/ policy; • Mix of farms; • Community pasture; • OMAFRA rep Trivers; • Livestock sale yards; abattoir • 4 seasons (variety); • Large numbers of summer residents;

April 2013: Mennonite Workshop Attendees: 32

Crops of Interest (no rank): fruit trees, vegetables

This informal workshop identified several barriers for agricultural expansion in the Mennonite community. These were:

- Limited availability for tile drainage due to high demand and no local contractor
- More locally stored grains is encouraged for off-season times (March, at harvest time)
- Need for broker in the Mennonite community (transport and marketing logistics)
- Local advantage: only a single generation gap for utilizing local foods (i.e. grandparent can still teach grandchild cooking with local food) as oppose to two-generation gap in southern Ontario.
- Interested in grower cooperative.
- Some interest in year-round crop options such as greenhouses, flash freezing and dehydration.
- Would like to see more opportunity (buyers) at livestock auction.
- Would like to see soil and tissue testing options locally
- Interest in pest control for vegetables

May 1, 2013: Prince Township

Attendees: 3

Crops of Interest (No rank): grains, hay, garden crops; drainage

Anchors (Barriers)	Wind (Strengths)
<ul style="list-style-type: none"> • Conservation authorities – zoning of wetlands • Production volume/capacity • Size of land • Pesticide regulations • Lack of available labour • “organic” brand marketing • Temperature and climate variations • Weather • Money • Time 	<ul style="list-style-type: none"> • Increase in demand for local products • Tourism economy • Support from local retailers

Additional Comments:

The rise in black-market sales by non farmers on city owned properties is becoming devastating to our bottom line. The city should be ticketing these activities. Mainly at 2nd Line and Goulais Ave. lot.

7/5/2013 9:29 AM

Time. I think that because almost none of us are full time farmers, finding time to do things planned and properly is nearly impossible.

7/4/2013 10:32 PM

Get local farmers involved with crop trials by sending Saul Fraleigh out every two weeks or so to measure, weigh advancement of various varieties of the farmers' choice of crops. This would be cheap research with answers to the farmers questions.

6/26/2013 8:47 AM

-Need reliable, cost-effective abattoir that processes water fowl -need to explore agritourism projects (e.g. bicycling tours on St. Joes) resulting in infrastructure (Inns, restaurants, local food production, niche markets) -need a place to sell more produce e.g. expanded indoor farmers markets, buying/shipping co-ops

6/20/2013 11:49 AM

Is it possible to investigate if one of us can be trained on egg-grading so we are able to sell at the market? I would satisfy our consumers.

6/19/2013 4:02 PM

Shitaki mushrooms for RAIN crop trials. I have a hard time finding information on crops for Algoma. i.e. University of Saskatchewan Cherries and mushroom production.

6/19/2013 3:58 PM

I would like to see a comparison between tile and no-tile land to get a better understanding of the growing advantage of the tiled ground over non-tiled.

6/4/2013 1:47 PM

We need better access to the broader local market.

5/31/2013 9:54 PM

the Concept is great, however who sets your priorities, it should be a farmer/commodity group of established real farmers who earn their living farming

5/31/2013 8:00 AM

Invest this "research \$\$" right into the farms.

5/31/2013 12:12 AM

Think that RAIN is a great project and is doing a great job.

5/30/2013 8:55 PM

My farm is 100% tiled already, really want to work on studying crops that allow farmers to extend grazing into fall and early winter

5/30/2013 7:27 PM

Small acreage farmers are by necessity very entrepreneurial and independent because most organisations don't seriously consider them a farm, despite the very high revenues they are capable of earning. There is very little support of any kind to small acreage farms. I would encourage RAIN to consider the value of small acreage farms and their unique challenges and needs, and not just focus on large acreage farms.

5/30/2013 6:12 PM

RAIN is serving a big role in exploring opportunities, educating the public to local foods, and encouraging farming in Northern Ontario. Kudos to what you are doing!

5/30/2013 5:27 PM

love the workshops, keep them coming

5/30/2013 3:57 PM

Appendix 2 - RAIN Research Agenda Survey

Please take the time to fill out this brief survey to help us identify Algoma's strengths, obstacles, and opportunities.

1. Who are you?

- Producer
- Supplier
- Processor
- Farmers' market vendor
- Municipal staff
- Not for profit organization
- Other (please specify):

2. Where in Algoma are you from?

- Sault Ste. Marie/Prince Township
- Echo Bay/Sylvan Valley
- Bar River/Laird
- Desbarats/Johnson
- St. Joseph Island
- Bruce Mines/Plummer/Ophir/Dunns Valley
- Thessalon/Huron Shores
- Other (please specify)

3. If you are a producer, what do you raise, grow or produce?

- Oilseeds
- Cereals
- Forages/hay
- Beef
- Pork
- Chicken
- Lamb/Goat
- Vegetables/Fruits
- Maple Syrup
- Other products (please specify)

Appendix 2 - RAIN Research Agenda Survey Continued

4. In your view, what obstacles do producers in Algoma share (choose your top 5)?

- Limited infrastructure for processing crops
- Limited infrastructure for processing livestock
- Limited infrastructure for storage
- Limited onfarm infrastructure
- Short growing season
- Limited outreach and knowledge transfer
- Limited drainage infrastructure
- Limited access to financing for startup
- Limited access to financing for equipment
- Limited market knowledge or expertise
- Small labour market
- Other (please specify)

5. What are the greatest strengths that producers in Algoma share (choose your top 5)?

Distance to market

- Low cost of land/lower taxes
- Fertile soil
- Climate
- Ambitious farmers or entrepreneurs
- Local farmers' markets
- Conscious consumers that support local farms
- Access to rail or water (transportation networks)
- Rising commodity prices
- Farm diversity
- Local producer cooperative (Echo Bay Ag Centre)
- Knowledge from farmers in the area
- Local social services (i.e. hospitals and schools)
- Other (please specify)

6. What are the greatest threats to farming in Algoma (choose your top 5)?

- Aging farmers, limited succession planning
- Competition for labour
- Wildlife
- Value of commodities
- Perception of a limited market for local production
- Future energy supplies/rising energy costs
- Shifts in political priorities
- Lack of profitability
- Policies that exclude small farmers
- Decrease in rural population
- Unstable weather
- Rising input costs (feed, fertilizers)
- Other (please specify)

Appendix 2 - RAIN Research Agenda Survey Continued

7. What are the greatest opportunities for farming in Algoma (choose your top 5)?

- Climate change
- Popularity of niche market products
- Cooperatives for farm inputs or outputs
- Land/infrastructure improvements
- Advancements in agriculture science
- Marketing and raising awareness about local products
- Improvements in technology/farming practice
- Value added processing
- Opportunities for organic production
- Making use of Northern specific products (i.e. Non Timber Forest Products)
- Access to regional markets in Northern Ontario
- Access to global markets
- Other (please specify)

8. What crops would you like the RAIN Research Team to explore at the RAIN Crop Trial Facility?

- Forages (alfalfa, tall fescue, timothy, clover)
- Cereals (wheat, barley, oats, corn, rye)
- Oilseeds (canola, soy, flaxseed)
- Fruit crops (cherries, berries, apples, haskap, goji)
- Specialty crops (quinoa, rice, amaranth, hemp)
- Vegetable crops
- Biomass crops (miscanthus, switchgrass, tallgrass)

9. Have you completed RAIN's Tile Drainage Questionnaire?

- Yes, I have received a form to fill out
- Yes, I have submitted a form
- No, but I am interested in submitting
- No
- I am not sure

10. If you would like to fill out and submit the RAIN Tile Drainage Questionnaire, please enter your email/phone # so we can get in touch with you.

11. Do you have any additional comments for RAIN staff on the strengths, weaknesses, opportunities or threats of Algoma's agricultural sector?

Appendix 3 - Agricultural Tile Drainage & Storage Questionnaire

Agricultural Tile Drainage and Storage Questionnaire		For Office Use
CONTACT INFORMATION		
1. Last Name: _____ 2. First Name(s): _____		
3. Farmer/Corporation/Partnership Name (if applicable): _____		
4. Address - Fire Number/Road or Street: _____		
5. PO Box: _____ or RR No.: _____ 6. Post Office: _____		
7. Postal Code: _____ 8. Telephone/Cell Number: _____		
9. Email Address: _____		
10. How many properties do you farm? Own: _____ Rent: _____		
<i>Please include additional property information on reserve side of page.</i>		
PROPERTY INFORMATION		
11. Address - Fire Number/Road or Street: _____ <input type="checkbox"/> Same as above?		
12. Lot or Section: _____ 13. Concession: _____ 14. Roll No.: _____		
15. Geographic Township: _____ 16. Municipality: _____		
17. Lot Size: _____ acres _____ hectares		
18. Area farmed, including pasture land: _____ acres _____ hectares		
19. GPS Coordinates of driveway (Using Google or handheld GPS): _____ latitude _____ longitude		
20. Nearest road intersection: _____		
21. What is this farm used for (types of crops grown)? _____		
DRAINAGE INFORMATION		
22. Does your property drain naturally (sand, ditches, topo, etc.)? <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> partly		
23. Where do your ditches outlet to? <input type="checkbox"/> waterway <input type="checkbox"/> road ditches		
24. Is the property tile drained? <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> partly		
25. Date of installation: _____		
26. Contractor name: _____		
27. If tile drained, is the drain installed systematic or random? <input type="checkbox"/> systematic <input type="checkbox"/> random		
28. How much of the property is tile drained? _____ acres _____ feet/meters		
29. Do you have a legal drainage outlet? <input type="checkbox"/> yes <input type="checkbox"/> no		
30. Are you assessed to a municipal drain? <input type="checkbox"/> yes <input type="checkbox"/> no		
31. If yes, what is the name of the municipal drain? _____		
32. Do your tile drains require upgrading/interspacing? <input type="checkbox"/> yes _____ acres <input type="checkbox"/> no		
33. Are you considering additional or new tile drainage? <input type="checkbox"/> yes _____ acres <input type="checkbox"/> no		
STORAGE INFORMATION		
34. Do you have grain bin storage? <input type="checkbox"/> yes <input type="checkbox"/> no		
35. What type of grain storage? <input type="checkbox"/> in-barn <input type="checkbox"/> metal bin <input type="checkbox"/> silo		
36. What is the capacity (in tonnes) of each storage? _____		
37. Is this storage adequate for your operations? <input type="checkbox"/> yes <input type="checkbox"/> no		
38. Do you have on-farm drying facilities? <input type="checkbox"/> yes <input type="checkbox"/> no		
39. Do you have cold storage? <input type="checkbox"/> yes <input type="checkbox"/> no		
40. Do you have the ability to flash freeze perishable goods? <input type="checkbox"/> yes <input type="checkbox"/> no		
41. What storage facilities do you feel are required? _____		
COMMENT SECTION		
42. General Comments: _____		

QUESTIONS: Please feel free to contact David Thompson of RAIN at 705-942-7927 x3027 or dthompson@ssmic.com or Robert Bressan of Conestoga-Rovers & Associates at 705-254-2438 or rbressan@CRAworld.com

RETURN FORMS: All completed forms should be returned by **June 15, 2013** via mail to: Conestoga-Rovers & Associates (CRA), 96 White Oak Drive East, Sault Ste. Marie, ON, P6B 4J8, fax (705-254-2430), or email (rbressan@CRAworld.com).



For an electronic copy of this survey, please contact rbressan@CRAworld.com



CONESTOGA-ROVERS & ASSOCIATES
 Water & Environmental Engineering, Construction, and IT Services

Appendix 3 – Agricultural Tile Drainage & Storage Questionnaire Continued

Use this side of page only for additional properties, if applicable

PROPERTY INFORMATION (p.2)

11. Address - Fire Number/Road or Street: _____ Same as above?
 12. Lot or Section: _____ 13. Concession: _____ 14. Roll No.: _____
 15. Geographic Township: _____ 16. Municipality: _____
 17. Lot Size: _____ acres _____ hectares
 18. Area farmed, including pasture land: _____ acres _____ hectares
 19. GPS Coordinates of driveway (Using Google or handheld GPS): _____ latitude _____ longitude
 20. Nearest road intersection: _____
 21. What is this farm used for (types of crops grown)? _____

DRAINAGE INFORMATION (p.2)

22. Does your property drain naturally (sand, ditches, topo, etc.)? yes no partly
 23. Where do your ditches outlet to? waterway road ditches
 24. Is the property tile drained? yes no partly
 25. Date of installation: _____
 26. Contractor name: _____
 27. If tile drained, is the drain installed systematic or random? systematic random
 28. How much of the property is tile drained? _____ acres _____ feet/meters
 29. Do you have a legal drainage outlet? yes no
 30. Are you assessed to a municipal drain? yes no
 31. If yes, what is the name of the municipal drain? _____
 32. Do your tile drains require upgrading/interspacing? yes _____ acres no
 33. Are you considering additional or new tile drainage? yes _____ acres no

PROPERTY INFORMATION (p.3)

11. Address - Fire Number/Road or Street: _____ Same as above?
 12. Lot or Section: _____ 13. Concession: _____ 14. Roll No.: _____
 15. Geographic Township: _____ 16. Municipality: _____
 17. Lot Size: _____ acres _____ hectares
 18. Area farmed, including pasture land: _____ acres _____ hectares
 19. GPS Coordinates of driveway (Using Google or handheld GPS): _____ latitude _____ longitude
 20. Nearest road intersection: _____
 21. What is this farm used for (types of crops grown)? _____

DRAINAGE INFORMATION (p.3)

22. Does your property drain naturally (sand, ditches, topo, etc.)? yes no partly
 23. Where do your ditches outlet to? waterway road ditches
 24. Is the property tile drained? yes no partly
 25. Date of installation: _____
 26. Contractor name: _____
 27. If tile drained, is the drain installed systematic or random? systematic random
 28. How much of the property is tile drained? _____ acres _____ feet/meters
 29. Do you have a legal drainage outlet? yes no
 30. Are you assessed to a municipal drain? yes no
 31. If yes, what is the name of the municipal drain? _____
 32. Do your tile drains require upgrading/interspacing? yes _____ acres no
 33. Are you considering additional or new tile drainage? yes _____ acres no

