Canadian Agricultural Adaptation Program
Project Summary List

Agri-Futures Nova Scotia

CAAP Project Number: NS0271
Project Name: AgroGreen Energy
Recipient: Integrated Digital Services Ltd
The intent of this project was to identify large-scale operations that could/would use hemp crop grown by Nova Scotia farmers, and to provide multiple areas of use to provide the best chance of success. Hemp is a crop of increasing popularity as a rotational crop. Hemp is well suited to Nova Scotia's growing conditions and the end use products of hemp are varied. Large kiln operators were targeted for testing and as a market in a fledgling industry. Baled industrial hemp was accessed from a farm in Nova Scotia. The product was examined in a laboratory for composition and general content. The benefeciaries of this project were farmers and value-added manufacturers.
Total Project Cost: $105,979.00
Approved Agri-Futures Nova Scotia CAAP Funding: $79,729.00 **Actual:** $79,728.50

CAAP Project Number: NS0276
Project Name: An Assessment of the Impact, Regulatory Regime and Outlook of the Nova Scotia Dairy Sector
Recipient: Dairy Production Enhancement Society
Very little industry-focused research has been conducted over the past decade on high-level issues that relate to both the general milk production sector and its influence on both the dairy farmer and community within which it operates. This project addresses the lack of information on the economic impact, outlook and regulatory structure of Nova Scotia's Dairy Production Sector in an effort to inform dairy farmers and other stakeholders on its value, challenges, opportunities and governance. The results of this study are important mainly to dairy producers because the information will help them better understand the industry and how it relates to their individual businesses. Other stakeholders will benefit from information that helps them to better understand the agricultural sector with the largest provincial farm gate sales. The report shows that the primary dairy sector significantly supports the economy. Also demographic and potential policy changes are identified and a comparison of Nova Scotia's system to some of its neighboring provinces is given.
Total Project Cost: $52,191.50
Approved Agri-Futures Nova Scotia CAAP Funding: $27,143.75 **Actual:** $24,030.00

CAAP Project Number: NS0277
Project Name: Nova Scotia Poultry Processing Solution
Recipient: Chicken Farmers of Nova Scotia
This project was initiated in order to carry out the foundation work necessary for the development of a long-term solution for the poultry processing industry in the province after Maple Leaf Foods announced the closure of its poultry processing facility. An industry study commissioned in 2008 by Chicken Farmers of Nova Scotia recommended that the preferred solution was to have a single processing plant in Nova Scotia with the capacity to process all of the province's chicken and turkey production. With this recommendation in mind, the new concept of a 50/50 partnership between Maple Lodge and a company formed by Nova Scotia's chicken and turkey producers was developed. As a result of the detailed engineering, legal and financial work conducted during the course of this project, the basic concept of a new partnership between producers and an existing processor was able to become a solid reality. A majority of the chicken and turkey producers in Nova Scotia have become shareholders and investors in the new company. And most important, a sufficient volume of product has been committed to the new plant to ensure it is profitable, self-sufficient and economically viable over the long-term.

Total Project Cost: $546,436.08
Approved Agri-Futures Nova Scotia CAAP Funding: $440,000.00 **Actual:** $437,148.86

CAAP Project Number: NS0278
Project Name: New Opportunities in Value-added Agriculture (NOVAA)
Recipient: Eastern Kings Chamber of Commerce
The goal of this project was to enable agricultural and food production businesses to explore, develop and implement a growth strategy for Value Added Agriculture through a) Assisting agricultural producers in identifying new value-added product opportunities and new markets. b) Providing producers with business and feasibility planning skills. c) Linking the producers with private sector businesses and public sector agencies. d) Encouraging producers to adopt new technologies that will increase efficiency and facilitate new markets. e) Increasing overall profitability. A one-day conference was held, an interactive five-day skill training program was conducted and a series of five pre-taped webinars were shown to participants. The final step was the development of a hard-copy resource about value-adding. As a result of this project, program participants have added tools to help increase the profitability of their current businesses through value added activities and the next steps have already begun with many of those participants engaging other resources to further develop their value added ideas.
Total Project Cost: $61,269.21
Approved Agri-Futures Nova Scotia CAAP Funding: $53,500.00 **Actual:** $51,237.20

CAAP Project Number: NS0279
Project Name: Oilseed Protein Directions for Atlantic Canada
Recipient: Atlantic Grains Council
Primary agriculture has always been challenging and at times vulnerable to low economic returns, but it has been particularly difficult the last few years because of: fluctuating exchange rates, US Country of Origin Labeling, foreign government assistance programs and the general state of the global economy. Many non-supply managed agricultural commodities grown in Atlantic Canada struggle for long run viability because of high production cost and the inability to differentiate products grown in the region from those imported. The region does however, have some comparative advantages in production agriculture and they include access to low land relative to productivity, available work force and slightly lower wages for hired workers. This report provides a framework around the possibility of developing an oilseed sector within the Atlantic region. To explore this possibility, industry specialist were invited to attend a think tank session to discuss various oilseed crops and assess their market potential and relative profitability.
Total Project Cost: $79,990.00
Approved Agri-Futures Nova Scotia CAAP Funding: $14,962.50 **Actual:** $12,907.46

CAAP Project Number: NS0280
Project Name: 2009 Research Forum
Recipient: NB Soils and Crops
This report presents the results of the Atlantic Agricultural Research forum, convened in Fredericton on December 7-8, 2010. The forum was chaired by the New Brunswick Soil and Crop Improvement Association, whose mission is to stimulate innovation, research and leadership for the advancement of the agricultural industry. Within the Maritimes there are a number of groups and organizations doing research on a number of agricultural issues. Unfortunately, there is a lack of communication among the groups to transfer the information to the other groups and the end users. The overall goal of the Forum was to bring together the agricultural and related research communities from around the Maritimes to present the research they are currently working on, identify gaps in research and facilitate the networking necessary to build research alliances and promote a more effective and productive research community.
Total Project Cost: $116,560.75
Approved Agri-Futures Nova Scotia CAAP Funding: $4,614.87 **Actual:** $2,521.50

CAAP Project Number: NS0281
Project Name: Independent and Scientifically Controlled test of a Newly Patented Ash-removal System for a Bio-fuel Furnace
Recipient: LST Energy Inc.

Hi-ash palletized bio-mass has not received mass market acceptance because of problems with agglomeration and the failure of all manufacturers to date to produce a burner that could successfully manage clinker formation. To date, consumers have rejected hi-ash palletized fuels in favor of high quality wood pellets, which burn without agglomeration. The LST burner was designed to burn all hi-ash palletized bio-mass fuels, without agglomeration, achieving full combustion and with excellent emissions readings. The CAAP agreement with LST energy INC. was meant to fund the design and manufacturing of the prototype provided to the NSAC team for independent testing. The testing took place from December 2009 through May 2010. The results on every measure were excellent. The burner performed consistently and reliable. One conclusion by the NSAC is that the burner is suitable for domestic use. Because of this independent testing to prove the effectiveness of this design, biomass growers, pellet producers and consumers will have confidence to grow, invest and buy. This develops an entire new industry.

Total Project Cost: $64,261.37

Approved Agri-Futures Nova Scotia CAAP Funding: $15,000.00 **Actual:** $15,000.00

CAAP Project Number: NS0283CO (QP6420CO)

Project Name: Identifying Regional Infestation Sources of Internal Lepidoptera in Apples

Recipient: Centre de recherche agroalimentaire de Mirabel

The aim of the project is to identify infestation sources of the codling moth and the oriental fruit moth (OFM). More specifically, the aim of the project is to:

• Determine whether the abandoned orchards, the orchards without monitoring and the storage bins used by the processing and packing industries can be regional infestation sources of codling moth and the oriental fruit moth (OFM)

• Propose realistic solutions to reduce the infestation sources for these two pests.

Total Project Cost: $117,473.00

Approved Agri-Futures Nova Scotia CAAP Funding: $5,000.00 **Actual:** $5,000.00

CAAP Project Number: NS0284CO

Project Name: Conjugated Lineolic Acid And Other Beneficial Fatty Acids In Lamb Produced On Different Feeding Systems

Recipient: Sheep Producers Association of Nova Scotia

Two years of grazing and finishing trials were the core of the research. In both years lamb growth on pasture was enhanced by including red clover in the pasture, and these gains continued in the finishing period. Supplementation with fish oil in the final five weeks of feeding resulted in a product that had greatly enhanced levels of essential fatty acids. The data in these results show producers the vital steps needed to enhance lamb production on pasture and the potential that comes from omega-3 supplementation in finishing diets. The scientists now have a scientifically proven method to produce a specialty lamb (omega-3 enhanced).

Total Project Cost: $152,897.21

Approved Agri-Futures Nova Scotia CAAP Funding: $76,512.33 **Actual:** $76,512.33

CAAP Project Number: NS0286CO (NB0229CO)

Project Name: Maritime Pollination Workshop with CANOPOLIN Researchers

Recipient: Bluets NB Blueberries

This report presents the results of the Maritime Action Forum on Pollination Research, convened in Moncton on March 19, 2010. The Forum was co-chaired by Bluets NB Blueberries and the Conservation Council of NB. The Forum brought together CANPOLIN research scientists, beekeepers, blueberry, cranberry and apple growers, government representatives and the CCNB network to seek potential solutions for the problem of pollinator decline. The objectives of the Forum were to inform producers about research being conducted under the CANPOLIN initiative, and to create an opportunity for producers to provide direction into research priorities. The Forum focused on three themes: bee health, bees in agricultural ecosystems, and plant pollination. Each theme comprised presentations of current research objectives and activities by CANPOLIN research scientist followed by working group discussions from which emerged a number of priorities.

Total Project Cost: $37,300.00
Approved Agri-Futures Nova Scotia CAAP Funding: $10,430.00 **Actual:** $6,804.00

CAAP Project Number: NS0287CO (QP6421CO)
Project Name: Evaluating BTI Biopesticide against Cabbage Maggot, *Delia radicum L.*
Recipient: Centre Recherche Agroalimentaire de Mirabel
This project consists of two parts. The first part consisted of lab tests to establish the vulnerability of cabbage root fly larvae, Delia radicum L., to two Bacillus thuringiensis var. israelensis formulations. The second part consisted of assessing the efficacy of a Bti formulation on cabbage root fly larvae in the fields. The tests were carried out during the 2011, 2012, and 2013 seasons in cauliflower and rutabaga experimental plots located in Oka (Laurentides) and L'Assomption (Lanaudiere).
Total Project Cost: $100,372.00 **Total CAAP Funding:** $79,085.00
Approved Agri-Futures Nova Scotia CAAP Funding: $5,000.00 **Actual:** $5,000.00

CAAP Project Number: NS0292
Project Name: Food Connections Research Project
Recipient: Ecology Action Centre
Farmers operating within the commodity-based agriculture model struggle to compete at a global level. Many are looking for alternative models to market their goods; through direct marketing, CSAs, farm markets, etc. The objective of this project is to conduct research to examine the question: Can programs to build food skills encourage agricultural direct marketing? The project has been very successful at strengthening people's relationship with food and the farmers that grow it. The data shows that many of the workshops participants have gone on to participate in direct purchasing when they used these newly acquired food skills at home. This work benefits both urban consumers and agricultural producers and their families by giving consumers the tools to purchase and prepare healthier, local foods, and by helping farmers make connections to steady consumers in order to make a decent living for the farmers work.
Total Project Cost: $41,368.30
Agri-Futures Nova Scotia CAAP Funding: $34,000.00 **Actual:** $34,000.00

CAAP Project Number: NS0293 CO (NB0227CO)
Project Name: Methodology of Toxin testing for grain samples
Recipient: Atlantic Grains Councils
The objective of this project was to work with all members of the wheat handling system, producers, analytical laboratories, grain handlers, through to end product manufacturers, to overcome this problem and achieve a mutually agreed upon testing protocol which met the confidence requirements of the industry. The AGC initially investigated this issue by requesting that a number of local analytical laboratories perform DON testing on sub-samples of wheat which the AGC had prepared. This approach allowed them to evaluate a number of laboratories and to quantify the extent of the variation of the readings on the samples. The results of this preliminary phase of the project highlighted that there was indeed a significant problem with achieving reproducible results.
Total Project Cost: $61,140.00 **Total CAAP funding:** $32,160.78
Agri-Futures Nova Scotia CAAP Funding: $10,720.26 **Actual:** $10,720.26

CAAP Project Number: NS0294
Project Name: Benchmarking & Key Performance Indicators for the Nova Scotia Dairy Industry
Recipient: Cape Breton Partnerships Inc.
The purpose of the project was to investigate key performance indicators, current benchmarking software, and to create and pilot a web based financial and reporting application will allow dairy farmers to enter and track their financial and farm operational information. This project is significant for stakeholders because it clearly identifies what is required to benchmark their farm, both internally against themselves and externally against other operations. It helps identify what areas in the operation need to be targeted and therefore make an improvement in the bottom line. It is expected that this project solution will be implemented further. Feedback obtained indicated that the users were very happy with the results. Users see it being a valuable tool in dairy business management. The true power in the application is not only being able to measure the success of the users operation but in being able to compare to the rest of the industry.

Total Project Cost: $103,497.50
Approved Agri-Futures Nova Scotia CAAP Funding: $84,997.50 **Actual:** $84,997.50

CAAP Project Number: NS0296
Project Name: Celery Production Development for Cool Climate on Mineral Soil in Nova Scotia Celery
Recipient: Horticulture Nova Scotia
Horticulture Nova Scotia conducted a trial in 2010 and 2011 to investigate the viability and economic potential of the local production of celery in Cape Breton. The results of this project are significant as it proves that this crop can be grown in the cooler climate of Cape Breton. It also shows that there is much to be learned regarding production practices for success. The next step for Horticulture Nova Scotia is to provide the results of this trial to interested farmers in NS and develop future projects with interested producers to further evaluate aspects of the production of this crop and continue development of a strategy that would advance a commercial local industry and displace imported celery. This crop should fit well with other leafy greens and the benefit of field packaging would improve the viability of this crop.
Total Project Cost: $47,330.00
Approved Agri-Futures Nova Scotia CAAP Funding: $40,000.00 **Actual:** $40,000.00

CAAP Project Number: NS0297
Project Name: Growing Industrial Hemp in a Maritime Climate in Nova Scotia
Recipient: Integrated Digital Services Ltd
This project addressed the challenges in growing industrial hemp in Nova Scotia. The project and results that were achieved are significant to the target group because the industrial hemp plant has multiple uses and subsequent products that can be made from the plant. To increase the comfort level in growing the crop, the target group is able to identify product areas that they may have expertise in, or can easily integrate their operations within. There is still a need to address potential challenges within the harvesting of the crop. However, that may be expertise that can be garnered from other areas where industrial hemp is an annual crop.
Total Project Cost: $51,675.80
Approved Agri-Futures Nova Scotia CAAP Funding: $40,486.67 **Actual:** $33,058.75

CAAP Project Number: NS0298
Project Name: Control of Black Root Rot In Strawberry Production Using High-Fungal Compost Incorporated Into Raised Beds
Recipient: Horticulture Nova Scotia
Black root rot (BRR) is a complex and serious soil borne disease and a major contributing factor in declining strawberry yields in Nova Scotia. Chemical control has not been effective and the soil fumigant Telone is soon to be withdrawn from the Canadian market. This project addressed the decline in strawberry yields due to black root rot. Although there was no significant reduction in the presence of BRR in the two years surveyed, Horticulture Nova Scotia learned that high-fungal compost has improved the soil biology. More significantly the use of high-fungal compost has increased yields, suggesting that further research into the effects on plant health through the use of high-fungal compost is warranted.
Total Project Cost: $32,445.93
Approved Agri-Futures Nova Scotia CAAP Funding: $29,300.00 **Actual:** $27,579.04

CAAP Project Number: NS0299
Project Name: Field Test to Evaluate Novel Breeding Marker Panel for Herd life and Reproduction in Holstein Cattle
Recipient: Performance Genomics Inc.
The objective of the project was to evaluate under pre-commercial conditions, the effectiveness of a putative DNA-based predictive marker test for herd life and fertility of Holstein cattle. The function of the marker test is to predict genetic merit for herd life and fertility in Holstein cattle. The project has not resulted in the level of accuracy that is required by the industry. There is a need to use the increasingly powerful genomics tools to identify the genes responsible for the control of reproductive longevity. As a result of the project there is DNA samples and cow data that can be used in a follow-up project.
Total Project Cost: $235,516.36

Approved Agri-Futures Nova Scotia CAAP Funding: $95,000.00 **Actual:** $95,000

CAAP Project Number: NS0302
Project Name: Conversion of Mink Fat into Bio-Diesel - Pilot Project
Recipient: SPEC Environmental Solutions Inc.
Disposal of mink carcasses and waste is of utmost importance for environmental reasons as well reduction in disease and watershed contamination aspects. This project aims to create an environmentally acceptable solution to the waste disposal issue as well as preventing the spread of Aleutian Disease and other diseases by using the mink fat to create mink oil and bio-diesel. Through the exploration of the methods of rendering and extracting mink oil from the fat, this project could be a huge contribution to the reduction of disease, clean-up of the environment, and the potential run-off of effluent to the river systems of Digby and Yarmouth counties.
Total Project Cost: $260,232.27
Approved Agri-Futures Nova Scotia CAAP Funding: $91,313.45 **Actual:** $84,736.26

CAAP Project Number: NS0304CO
Project Name: Effect of Supplementing Low Protein Diets With Synthetic Amino Acids on the Production Performance of Laying Hens
Recipient: Nova Scotia Egg Producers
Since synthetic amino acids have become commercially available, there has been increased interest in feeding low protein amino acid supplemented diets. This interest is due to the reduction in cost of diets that contain lower amounts of one of the most expensive feed ingredients: protein. As laying hens cannot store excess amino acids, excesses in the diet are costly, wasteful and have a negative impact on the environment. In this project an experiment was designed as a 2 X 2 factorial analysis with the main factors being primary grain source and dietary crude protein level. Feed consumption, body weights, hen day production and egg quality were measured. Amino acid digestibility in some ingredients may be under estimated, therefore some diets may be over supplemented with too much synthetic amino acids that would not only result in an increase in the cost of the diets, but also with the non-required amounts ending up as nitrogen in the excreta. In addition, since this trial was conducted, more synthetic amino acids have become commercially available and will allow for more amino acid requirements of the laying hen to be met.
Total Project Cost: $87,073.52
Approved Agri-Futures Nova Scotia CAAP Funding: $34,905.00 **Actual:** $27,274.91

CAAP Project Number: NS0305CO (NB0242CO)
Project Name: Control of the Balsam Gall Midge *Paradiplosis tumifex* Gagneé (Diptera: Cecidomyiidae) with Sex Pheromones and Mass Trapping: pre-commercialization and development of a control product
Recipient: INFOR Inc.
This project was intended to develop a better understanding of the biology of the balsam gall midge while also identifying, synthesizing and utilizing sex pheromones as a means of population monitoring and mass trapping/control. The project is now complete and has resulted in new management strategies to help producers deal with future gall midge infestations in a more effective and economical way. The development of a greater understanding of the population dynamics and current population demographic of balsam gall midge has been a direct result of field trapping and lab rearing. In addition, monitoring activities have yielded a greater accuracy in pinpointing emergence timing of gall midge adults during the spring. Grower education concerning balsam gall midge has also improved as a result of the outreach efforts that are part of this project. Once gall midge returns to economically damaging populations, producers will be well equipped to monitor, plan and implement population control strategies to mitigate potential damage.
Total Project Cost: $417,451.00
Approved Agri-Futures Nova Scotia CAAP Funding: $140,800.00 **Actual:** $140,800.00

CAAP Project Number: NS0306
Project Name: South Western Nova Scotia Climate Data Research Project.

Recipient: Yarmouth Regional Business Development Corporation
The South West Nova Scotia Climate Data study that began in 2011 was highly successful. The mapping of the microclimate throughout the region is proving to be valuable assets for current and potential producers in the area. The project is showing that, from a temperature and solar radiation perspective that there are many areas throughout the western region of Nova Scotia that would be suitable for agriculture production of high value crops. The project is also helping to dispel the myth that the area is a cold and wet environment suitable only, to a very limited agriculture industry. It is expected that with continued analysis, that specific climate trend will be identified. The data is already leading to great interest in agri-development in South West Nova Scotia.
Total Project Cost: $269,056.69
Approved Agri-Futures Nova Scotia CAAP Funding: $34,718.00 **Actual:** $32,197.55

CAAP Project Number: NS0307
Project Name: Environmental Performance Database
Recipient: Nova Scotia Federation of Agriculture
The objective of this project was to develop a comprehensive database that allows the NSFA to accurately review and report on various environmental initiatives that have been completed on Nova Scotia farms since 1999. This project will improve knowledge of solutions or strategies that have been analyzed or tested to address issues and opportunities. The database generates reports on commodity, livestock units, land use, water sources, waste disposal, nutrient management, manure handling, fertilizer use, pesticide use, fuel storage, soil management, energy use and biodiversity activities on over 1600 farms across the province. It also documents initiatives that have been undertaken on farms and performs comparisons of environmental risk ratings from year to year. This information will allow the NSFA to accurately assess the overall environmental performance of the industry and determine if current practices and programs, being offered to farms, are effectively reducing environmental risk.
Total Project Cost: $59,756.18
Approved Agri-Futures Nova Scotia CAAP Funding: $77,500.00 **Actual:** $50,129.97

CAAP Project Number: NS0308CO / NS0308CO
Project Name: Nutritional Value and Pesticide Content of Pollen Collected by Commercial Honey Bees *Apis Mellifera* in the Maritime Provinces and Its Implication for Honey Bee Health
Recipient: Nova Scotia Beekeepers' Association
This study tests if the diets of honey bees that are pollinating crops (apples, blueberries, and cranberries) in the Maritimes are obtaining essential nutrients. Results of this study benefits beekeepers of the Maritime Provinces, by documenting honey bees' preferences for crop versus non-crop pollens. The project results have shown that honey bees scarcely use pollen from blueberries and cranberries. From the pesticide data, it has been learned there is no acute threat from pesticide contamination of pollen in Maritime colonies, although there is a possibility of sub-lethal effects.
Total Project Cost: $84,746.55
Total CAAP Funding (Approved by all Partner Councils): $71,450.00 **Actual:** $69,141.64

CAAP Project Number: NS0310CO / NB0250CO
Project Name: The Maritime Oilseed Guide and Technical Forum
Recipient: Atlantic Grains Council
As our landscape changes within the Maritimes Provinces and the recent opening of a crushing facility in Quebec (April 2010), Atlantic Grains Council took the opportunity of the demand of increased acreage of oilseeds and gathered information to produce a grower manual which showcases canola, soybean, crambe and borage. This manual is specific to a step by step on how to grow oilseeds in the Maritimes. This manual is in both official languages. The second part of the project was to organize a regional growers workshop, one being on the Island (January 2012) and one in NB (February 2011). A number of experts presented growers information on growing oilseeds within the maritime climate. The manual and workshop both were able to increase the grower's knowledge and allowing them to diversify their crops. Both events were well attended and appreciated.
Total Project Cost: $53,421.50
Approved Agri-Futures Nova Scotia CAAP Funding Portion: $13,633.00 **Actual:** 13,633.00

Project Number: NS0312CO (NS0312CO)
Project Name: Study factors that affect apple quality as a critical principle of a Total Quality Management (TQM) program for high value apples grown in Maritime Canada.
Recipient: Nova Scotia Fruit Growers Association
This three year project from the Nova Scotia Fruit Growers Association aims to provide a model for producers to use in producing high quality apples consistently. This research has enabled the tree fruit industry in the Maritime region to become more highly competitive in the export market for high value cultivars. Knowledge gained in the management of fruit number intensity, maturity and post-harvest storage for optimum quality of cultivars tested will improve industry competitiveness. Applying total quality management principles will provide the market with a quality product that can make a more desirable product produced and supplied from other growing areas.
Total Project Cost: $285,784.30
Approved Agri-Futures Nova Scotia CAAP Funding Portion: $180,854.00 **Actual: $**180,853.99

Project Number: NS0313
Project Name: Evaluation of contaminants in surface and subsurface drainage water from land applied treated municipal biosolids
Recipient: Nova Scotia Federation of Agriculture
This study evaluates whether using currently recommended rates of NVS affects water quality parameters including pathogens, nutrient concentrations, heavy metals, and specific organic pollutants that may originate from the NVS applications. The key activities funded under this project involved regular monitoring of two research sites equipped with subsurface drainage water collection systems over a two year period. The biological significance of these results is unclear and was not a primary deliverable from this project. The key significance of the results for the target group relate to furthering understanding of the risk factors and mitigation measures associated with use of municipal biosolids. New strategies have been developed in the design of future experiments and new partners have been brought in to support additional analyses.
Total Project Cost: $90,600.00
Approved Agri-Futures Nova Scotia CAAP Funding: $77,000.00 **Actual:** $76,977.24

Project Number: NS0314CO (ON0074CO)
Project Name: Prototype Bulk Milk Truck Mounted Metering and Sampling System
Recipient: Dairy Farmers of Ontario
Over the past two years, Dairy Farmers of Ontario has been examining technologies and practices related to retrieving and transporting milk from the farm to the dairy. One stream of research is involving improved efficiencies related to the amount of time needed to move milk from the parlour tank to the bulk milk truck. Increasing pumping speed which, because of less time spent at the farm collecting the milk will result in cost savings. More accurate uniform, consistent, and accurate volume determination and sample collection at farms will allow dairy farmers to be competitive while maintaining or improving existing food safety and production practices. A field trial was needed to test truck-mounted automated metering and sampling (TMMS). The TMMS was unable to meet Dairy Farmers of Ontario's specification for pumping speed, measurement accuracy and system reliability. The field testing also showed that the TMMS technology is not sufficiently robust to withstand Canadian conditions.
Total Project Cost: $118,581.90 **Total CAAP funding:** $59,279.58
Approved Agri-Futures Nova Scotia CAAP Funding: $10,000.00 **Actual:** $5,637.35

Project Number: NS0315CO (NS0315CO) Project Name: Pesticides in honey bee hives in the Maritime Provinces: residue levels and interactions with *Varroa* mites and *Nosema* in colony stress
Recipient: NS Beekeepers' Association
So far as the Beekeepers' Association is aware, this project is the first in the Maritimes to quantify pesticide loads in beeswax from honey bee hives involved in blueberry pollination. In doing so, the project has provided insight into the hazards, or lack thereof, associated with pesticide exposure through beeswax as a consequence of being in this agricultural system. With this broad information, it could be possible to identify ways that blueberry growers and beekeepers can work towards better colony health.

Total Project Cost: $45,688.23
Agri-Futures Nova Scotia CAAP Funding Portion: $50,833.33 **Actual:** $38,484.23

Project Number: NS0319CO (QP6541CO)
Project Name: Simple Day Neutral Strawberry Yield Prediction Method Development
Recipient: Institut de recherche et de developement en agroenvironnement (IRDA)
While Quebec-grown strawberries are generally afforded a prominent place on food retailers' shelves during the summer seasons, their marketing presents a number of challenges. To maintain Quebec-grown strawberries' market share, steps were taken to develop a new yield forecasting approach, grounded in field-measurable parameters. The research was done on two farms' commercial day-neutral strawberry production fields. This project is more an evaluation of the approach potential, rather than an example of its implementation.
Total Project Cost: $214,956.00
Agri-Futures Nova Scotia CAAP Funding Portion: $5,000 **Actual:** $5,000

Project Number: NS0321CO (PE0326CO)
Project Name: Atlantic Johne's Disease Inititive
Recipient: Dairy Farmers of PEI
Johne's disease is a national priority for the dairy industry and guidelines for the implementation of provincial or regional programs have been endorsed by the Canadian Animal Health Coalition (CAHC). The proposed program builds on previous work (both education and research) in the region and is supported by CAHC, through the Johne's program director (see attached letter). The specific gaols of the program are outlined below. The project will focus on measurable outcomes to show progression of the Johne's strategy in Atlantic Canada as a pathfinding exercise in preparation for self-sustaining regional or national programing.
Total Project Cost: $1,183,847.00
Agri-Futures Nova Scotia CAAP Funding Portion: $266,804.00 **Actual:** $235,988.28

Project Number: NS0322CO (QP6544CO)
Project Name: Diagnostic Tool for Dairy Production: Potential Gains Analysis
Recipient: Valacta
The goal of this project was to develop an approach and a tool to identify potential financial gains for dairy farms, and to provide guidelines for the most profitable actions in each of Valacta's seven main areas of intervention: dairy and dairy ingredient production, quota management, nutrition, replacement management, reproductive management, udder health and labor efficiency. A method to estimate potential economic gains was developed, and was used as the basis to design the online tool and data repository, integrating control data and delivery and production-rights data. A delivery model to assist advisors and clients in targeting short- and intermediate term areas for improvement, establish realistic objectives, develop an action plan and ensure follow-up was also developed. The data gathered in the Valacta database will not only enable individual monitoring, but also provide a broader profile of the industry. For instance, it will be possible to trace the number of farms that have set objectives, and to analyze targets, selected sectors, and on-farm status against with those objectives. Finally, it will be possible to identify the particular actions to be undertaken collectively in the most frequently targeted sectors.
Total Project Cost: $282,860.00
Agri-Futures Nova Scotia CAAP Funding Portion: $11,300.00 **Actual:** $11,300.00

Project Number: NS0323CO (NB0261CO)
Project Name: Maritime Blueberry Industry Cost of Production – Collecting Data and final report
Recipient: Bluets NB Blueberries
This project provides cost and return information to help producers more carefully manage their berry production to obtain the maximum returns.There have been many changes in the production and marketing environment for the wild blueberry industry in recent years. Over the last decade input costs for blueberry production have increased and the inputs themselves have changed. More intensive production and the need to increase per acre yields are pushing producers and researchers to examine more carefully all factors that can influence production. The project has resulted in the preparation of a cost and

returns benchmarking study for the Maritime blueberry industry. Additionally, all growers participating in the survey received individual farm reports. Finally, currently in preparation is a worksheet to be made available to all producers to help them evaluate their business. Information on costs and returns will allow for comparisons between individual results and aggregate measures.
Total Project Cost: $70,540.00
Agri-Futures Nova Scotia CAAP Funding: $21,015.00 **Actual:** $18,263.53

Project Number: NS0327
Project Name: Hatching Egg Producers of NS "moving forward"
Recipient: Hatching Egg Producers Association of Nova Scotia
This project developed the tools (plan, regulations, allocation system, etc.) required to permit the newly formed Hatching Egg Producers Association and associated sector to become regulated under the Nova Scotia Natural Products Council. This reduces the risk of uncontrolled growth or expansion and possible disruption of supply which could cause harm to the whole poultry industry. This project was and is significant as once the project is successfully completed it would permit Nova Scotia to have a regulated industry which would add stability to the whole of the chicken industry in Nova Scotia.
Total Project Cost: $36,777.58
Agri-Futures Nova Scotia CAAP Funding: $98,600 **Actual:** $25,954.56

Project Number: NS0328CO (NS0328CO)
Project Name: Nutritive Evaluation of Cold-Pressed Meals for Broiler Chickens
Recipient: Atlantic Poultry Research Institute
Poultry diets are most commonly formulated using corn or wheat supplemented with soybean meal and/or canola meal. However, there is an anticipated rise in cost of grains, especially corn due to a demand from the energy sector. Efficient use of potential new meal ingredients for poultry requires knowledge of their feeding value. Results from this project indicate that meals produced as a result of mechanical pressing of black and yellow canola seeds which have been grown locally, can be used in broiler chicken diets potentially at a reduced cost of the diets.
Total Project Cost: $288,714.34
Agri-Futures Nova Scotia CAAP Funding Portion: $191,743.00 **Actual:** $191,743.00

Project Number: NS0329CO (NS0329CO)
Project Name: Utilization of crab meal to optimize long chain omega-3 fatty acid enrichment of eggs from hens of different genetic background
Recipient: Atlantic Poultry Research Institute
The challenge this project addressed was the use of omega-3 fatty acids from a marine source as a feed ingredient for laying hens of different genetic backgrounds. Marine products can influence bird production performance as well as negatively impact the sensory qualities of products produced. The project resulted in improved knowledge of potential innovative products, processes or technologies.
Total Project Cost: $99,618.15
Approved by all Partnering CAAP Councils: $110,500.00
Agri-Futures Nova Scotia CAAP Funding Portion: $52,000.00 **Actual:** $43,362.94

Project Number: NS0330CO (NS0330CO)
Project Name: Vaccination response in layers fed omega 3 fatty acids from marine sources
Recipient: Atlantic Poultry Research Institute
Inconsistent immune response to vaccination is a concern for Atlantic Canadian pullet producers, resulting in birds with poor disease resistance and increased expenses due to re-vaccination. At this time the use of crab meal in the development of laying hens for production is not a commercial practice. However, the results of this project demonstrate the importance of formulating feed not only for nutritional requirements of growth but to investigate the impact on the function of important systems such as the immune system. Future evaluations of fatty acid profiles as well as the source of important fatty acids can make use of information gained here to work to improve immune response.
Total Project Cost: $42,190.06
Agri-Futures Nova Scotia CAAP Funding Portion: $6,900.00 **Actual:** $6,900.00

Project Number: NS0331
Project Name: Opportunities for Nova Scotia Agriculture to Participate in Community Feed in Tariff (COMFIT)
Recipient: Nova Scotia Federation of Agriculture
The objectives of this project was to measure wind speed on six farms, provide an economic analysis based on turbine technology and measured wind speeds per site, investigate ownership models and present the information to the industry and public through a series of workshops. This project has been completed successfully and has in fact exceeded initial expectations in terms of numbers of target sites for wind measurements. The project design grew from six to thirteen sites based on requests and interest from farmers. The results of the economic analysis, based on average annual wind speeds for all thirteen sites, have produced estimated annual income. The results show that only four sites have a positive net present value.
Total Project Cost: $110,557.59
Agri-Futures Nova Scotia CAAP Funding: $81,000.00 **Actual:** $81,000.00

Project Number: NS0332CO (PE0338CO)
Project Name: Biochar Initiatives in Maritime Agricultural Production
Recipient: Soil Foodweb Atlantic Incorporated
Biochar is an emerging innovative product with increasing interest for its value in stabilizing soil nutrients and for carbon sequestration. However, in this area, producers have very little to no experience with it and many questions before they can consider using it on Maritime soils. Through field trials to assess intermediate and short term impacts of using biochar, this project will: determine if there are toxic properties in seed germination, determine optimum application rates, identify optimal media to use in application, evaluate impacts on Maritime blueberry and strawberry fields, and deliver research results for peer review.
Total Project Cost: $61,580.00
Agri-Futures Nova Scotia CAAP Funding: $17,448.00 **Actual:** $17,448.00

Project Number: NS0334CO (NB0266CO)
Project Name: Using Somaclonal Variation to Develop New Potato Cultivars for the Fresh Market
Recipient: New Brunswick Biotechnology and Technological Innovation Centre of Excellence
The goal of this project was to improve an already selected fresh market potato variety using a non-GM method. Customers of the potato industry have rejected GM potatoes. So, the only means available to improve potatoes is by conventional breeding, which can take 15-20 years to develop a new cultivar. Somaclonal variation (SV) has the potential to decrease that time to 5 years. SV is variation that is induced by putting a potato through the tissue culture process and regenerating a plant from a
part of the plant that would not normally make a plant. The stress of creating a plant from a “body” cell causes changes in gene expression patterns and variation in the new plant lines. The changes are random, so large numbers must be screened to find the trait of interest. We have screened 3 released potato varieties for their ability to regenerate plants from tissue culture and successfully regenerated plants from 2. At this point in the project, we have 6 lines that were selected in the first field season and 84 lines that were selected in the second field season. These lines will continue to be tested by TT over more locations to determine the stability of the yield increase for the next several years. The funding from CAAP and Little Potato Company contributed to the success of the project as well as the administration assistance of BioAtlantech, the potato breeding expertise of TT, and the plant tissue culture expertise of SGII. We do expect that somaclonal variation will continue to be evaluated and additional projects initiated as a method to improve potatoes and other crops that where GM is not option for improvement. SGII is currently seeking other partners for such projects.
Total Project Cost: $406,250.00
Agri-Futures Nova Scotia CAAP Funding: $14,462.50 **Actual:** $12,760.65

Project Number: NS0335CO (NB0269CO)
Project Name: Value chain management plan for the Maritimes hops industry
Recipient: The Maritime Hop Growers Cooperative
This report first describes in depth the key agronomical components surrounding hops production, in order to assist growers in optimizing their production in both quality and quantity. These aspects have

been discussed during field consultations and seminars organized between 2011 and 2012, and they have been put into a practical guide that will serve both new and experienced hop growers. The last part of the report focused on the most significant considerations surrounding market requirements and consequently industry development. The outcome is allowing growers, brewers and industry partners to understand the key elements of the value chain surrounding the production of hops. Therefore, this management plan allows the Maritime Hop Growers Cooperative to identify clear objectives and mandates for their organization in order to comply with agronomical challenges, economic realities and requirements underlined by the local craft beer industry.
Total Project Cost: $113,175.00
Agri-Futures Nova Scotia CAAP Funding: $38,740.00 **Actual:** $33,464.34

Project Number: NS0336CO (NB0268CO)
Project Name: Developing Industry Assessments while building relationships for an enhanced financial future for the Atlantic Grains Council
Recipient: Atlantic Grains Council
The Atlantic Grains Council has faced a number of challenges over the past few years, and remains determined to fulfill its continued relevance to the industry and to be successful in the future. The intent of the project was to define the value propositions for the Council and to develop strategic partnerships which will help insure a sustainable future for our organization. To date the Council has achieved this goal by consulting the industry for sector inputs and we identified emerging issues relevant to the AGC. This current project led us into another proposal titled Establish Producer Led Research Priorities in the Atlantic Grains and Oilseeds Sector. The outcome of this project is significant to all grain and oilseed producers as the future of research will now be in the hands of the Council. The Council will make sure research is complete for Atlantic Canada. At the AGM in December the following approvals were made: the AGC coordinates grain and oilseeds research and plays a leadership role in defining research priorities and in principle a sector driven voluntary producer levy for Atlantic Canada, development Coordination Role.
Total Project Cost: $67,500.00
Agri-Futures Nova Scotia CAAP Funding Portion: $16,000.00 **Actual:** $16,000.00

Project Number: NS0337CO (NS0337CO)
Project Name: The Efficacy of Yellow Seeded Full-Fat Canola Seeds and a Cold-Pressed Meal for Laying Hens
Recipient: Atlantic Poultry Research Institute
The objectives of this project were to evaluate the effect of including different levels of yellow-seeded canola, included as a full-fat seed or as a high oil residue meal, in laying hen diets for a complete production cycle on production performance as well as to determine the ability of the laying hen to deposit the omega-3 fatty acids from the full-fat yellow canola seeds and the high oil residue yellow canola meal into the egg. The objectives were completely fulfilled. A 16-week production trial was conducted and the trial delivered data on production performance of the laying hens, and egg quality. At 27, 31 and 43 weeks of age egg, cholesterol content was determined as well as fatty acid profiles.
Total Project Cost: $181,785.89
Agri-Futures Nova Scotia CAAP Funding Portion: $128,356.00 **Actual:** $91,732.28

Project Number: NS0338CO (NS0338CO)
Project Name: Efficacy of Lysozyme as an Alternative to Antibiotics for Broiler Chickens
Recipient: Atlantic Poultry Research Institute
The objectives of this research study were to determine the effect of lysozyme on the growth performance and intestinal micro flora of broiler chickens grown under optimal and sub-optimal conditions and to determine the optimal periods during the growth cycle in which to include lysozyme in the diets to obtain optimal growth performance. The objectives were completely fulfilled. A total of three growth performance trials were conducted with broiler chickens. The first two trials were replicate trials in which the birds were grown under optimal environmental conditions. For the third trial the birds were grown under sub-optimal environmental conditions. The trials delivered data on production performance of the broiler chickens, and ileal intestinal microbial populations of total aerobes, total anaerobes, total coliform, E.coli, Clostridium perfringens and lactic acid bacteria.

Total Project Cost: $162,293.84
Agri-Futures Nova Scotia CAAP Funding Portion: $148,314.00 **Actual:** $97,433.50

Project Number: NS0339CO (NS0339CO)
Project Name: Piloting a Liquid Waste Solution
Recipient: Spec Environmental Solutions Inc.
The mink industry in Nova Scotia has been in the news due to purported environmental damage created in the local watershed. The mink industry is now facing new regulations that will be imposed by the government regarding more environmentally friendly practices in relation to their waste in the fall of 2011. As a result of the new regulations being instituted, SPEC Environmental aims to provide a solution to the mink farmers by creating, on a small pilot scale, a system for the producers to dispose of their liquid manure in an environmentally friendly manner so that nutrients, nitrogen or phosphorus are not released into the local watershed. Different departments have examined the potential project environmental interactions and have determined pursuant to the Canadian Environmental Assessment Act that, taking into account the implementation of proposed mitigation measures and compliance with applicable regulatory requirements, the proposed project is not likely to result in significant adverse environmental effects.
Total Project Cost: $788,385.43
Agri-Futures Nova Scotia CAAP Funding Portion: $88,362.50 **Actual:** $43,213.50

Project Number: NS0341
Project Name: Piloting Quality Organic Milk Production, Processing and Marketing in Nova Scotia
Recipient: ECO Milk
The primary activities of this project were 1. Evaluation of feasibility and milk quality in commercial-scale milk trucking and processing through test-processing runs. Three test-runs were executed in spring and in the heat of summer, allowing East Coast Organic Milk to establish quality control and pricing on the trucking and processing steps. 2. A processing-marketing pilot project to gather expertise in small-scale organic milk processing and marketing. This was conducted between October 2012 and March 2013, assisting ECO Milk to work through supply issues and gather expertise on organic milk markets and marketing. 3. A milk quality testing project, allowing close monitoring of milk quality shipped from farms for a 12 months period. This proved useful to both demonstrate high quality of milk from farms, and to quickly address issues that developed, to ensure highest quality of products on the shelf. 4. An online traceability pilot project to develop a system of public reporting where and when each milk product is produced, processed and distributed. This was partially developed, and will allow an online traceability system to be put in place in 2013. The outcomes have been highly valuable for ECO Milk, Cook's Dairy and all who are connected with the local organic milk value chain.
Total Project Cost: $63,700.88
Agri-Futures Nova Scotia CAAP Funding Portion: $60,000.00 **Actual:** $38,921.23

Project Number: NS0342CO (NS0342C0)
Project Name: Sustainable Weed Management for the Wild Blueberry Industry
Recipient: Bragg Lumber Co Ltd
Weeds are one of the most important pests limiting wild blueberry yields in Atlantic Canada. A variety of field trials were established in 2012 and 2013 to evaluate potential herbicides and herbicide tank mixes for use by the low bush blueberry industry. All products evaluated except aminopyralid were safe on low bush blueberry when applied pre-emergence. All of the products evaluated tended to be more effective when tank mixed with hexazinone than when applied alone. The research concluded that it identified multiple herbicide products that could be effective tools for the blueberry industry that would slow the advent of herbicide resistance.
Total Project Cost: $113,359.28
Agri-Futures Nova Scotia CAAP Funding Portion: $86,488.00 **Actual:** $81,815.00

Project Number: NS0346
Project Name: Understanding Harvest Maturity and Storage of the New Apple Cultivar Minneiska
Recipient: Scotian Gold Co-Operative Limited

Scotian Gold has been pleased with project outcomes and deliverables from the project. Physiological maturity profiles have been developed and these are actively being used across the industry. Post-harvest storage protocols have been refined and are being used to successfully store fruit for periods meeting or exceeding original targets; and handling methods have been refined as a result of this work which has dramatically reduced the amount of bruising defects in the product. Work on protocols to minimize fruit russeting was less successful than hoped. Considerable work was carried out and insights gleaned, but we continue to work toward a long term practical approach russeting. Lastly considerable unexpected knowledge has been gained into the probable cause of misshapen Minneiska fruit, related to incomplete pollination. This knowledge is expected to be developed further in the coming seasons.
Total project cost: $118,380.72
Agri-Futures Nova Scotia CAAP Funding: $78,559.00 **Actual:** $62,912.84

Project Number: NS0348CO (QP6448CO)
Project Name: New techniques for ecological weed control in wild boreal blueberry fields
Recipient: Table Bio Alimentaire Cote-Nord, in conjunction with the Centre d'experimentation et de developpement en foret boreale (CEDFOB)
This project introduces new ecological control methods of the weedy species in low bush blueberry production. The roots-cutter treatment combined with other recognized control methods (softwood mulch, mowing the superior part of weedy species, mowing flush with the ground or burning of the vegetation) are potential avenues to success an ecological weeds control. The main objective of this project was to determine the best combinations of biological control methods (without synthetic herbicides) of the weeds associated to boreal blueberry fields. It also includes the development of a better understanding of the weedy species biology (detailing the phenological stage) in order to properly apply the tested treatments.
Total Project Cost: $138,335.00
Agri-Futures Nova Scotia CAAP Funding Portion: $7,000.00 **Actual:** $7,000.00

Project Number: NS0349CO (NS0349CO)
Project Name: Consumer Preference & Descriptive Sensory Analysis Testing of Apples from the Maritime Cultivar Evaluation Trial
Recipient: Nova Scotia Fruit Growers Association
The results of this project have highlighted the top cultivars that consumers prefer from the Maritime Cultivar Evaluation Trial and also that consumers rate flavor, texture and appearance as very important indicators of overall liking of an apple. Appearance is a strong cue to consumers' preference of an apple. This research has been useful in showing the apple industry which types of apples consumers prefer so they can tailor their operations to increasing demands of apples with good flavor, texture and appearance. The tree fruit industry in the Maritimes has been given another step to help them become competitive in the global market. Testing new cultivars for these appealing attributes is important for the future selection of cultivars for the modern and future orchard. This will allow growers to continue supplying the apples consumers want.
Total Project Cost: $135,608.67
Agri-Futures Nova Scotia CAAP Funding Portion: $118,124.00 **Actual:** $115,139.29

Project Number: NS0351CO (NB0280CO)
Project Name: "Grow A Farmer" Organic Apprenticeship and Mentorship Program
Recipient: Atlantic Canada Organic Regional
The most significant objective of the project was to identify, cultivate and renew the organic sector for Atlantic Canada. ACORN has identified a number of new entrant producers looking for educational and training services to support their start-up, and through Grow a Farmer has now established services and resources to assist their success as new farmers. Upon completion of its pilot year, as of December 2013, the *Grow A Farmer* Apprenticeship and Mentorship programs have been established and formalized as a multi-tiered system of education and skill development that have supported over 1000 new entrants during its first year of delivery. In addition, ACORN has now established the first program of its kind, Canada wide, by building bridges between experienced and new producers, and transferring knowledge and wisdom to equip new entrants with their beginnings.
Total Project Cost: $116,160.00
Agri-Futures Nova Scotia CAAP Funding Portion: $29,193.00 **Actual:** $29,193.00

Project Number: NS0352CO (NB0281CO)
Project Name: Development of a Quality Monitoring program in Atlantic Canada for the Measurement of Deoxynivalenol (DON) in Wheat
Recipient: Atlantic Grains Council
The purpose of this project was to develop a quality control system for Atlantic Canada when it comes to testing for DON. This project is significant to the stakeholder, because distress of variability is a significant problem to all grain handlers in Atlantic Canada as food safety continues to be of importance. The actual achievements for this project included developing a flow chart for all labs to use and post in their facility. Certified Reference Material (CRM) was purchased for accurate testing as well and an important educational brochure was prepared for handouts.
Total Project Cost: $40,080.00
Agri-Futures Nova Scotia CAAP Funding Portion: $9,356.67 **Actual:** $9,356.67

Project Number: NS0353CO (NS0353CO)
Project Name: Flavour Enhancement in Fresh Apples
Recipient: Scotian Gold Co-Operative Limited
The Flavour Enhancement in Fresh Apples project addressed market demand for excellent flavour in apples by examining the activity of natural flavour compounds (precursors) and how these can be introduced to apples and apple products with desirable outcomes. The work demonstrated that natural precursor compounds can be introduced to apples using delivery means that are straight forward for commercial adoption and result in reliable development of flavour volatiles within apples for enhanced natural and novel flavours. Further understanding of basic science will be required prior to commercial implementation to address the longevity and reproducibility of enhanced flavours at a level that can drive market demand.
Total Project Cost: $ 72,914.15
Agri-Futures Nova Scotia CAAP Funding Portion: $70,649.45 **Actual:** $55,183.74

Project Number: NS0354CO (NS0354CO)
Project Name: Evaluation of Simple Sugars and Short Chain Fatty Acids on Early Chick Growth and Intestinal Development
Recipient: Atlantic Poultry Research Institute
The objective of this research study was to determine the effectiveness of using sucrose, glucose and glycerol as single supplemental energy sources in broiler chicken starter diets on production performance and intestinal development. The objective was completely fulfilled. Two growth performance trials were conducted with broiler chickens. The first used chicks were provided by a local hatchery. For the second trial, chicks were hatched at Dalhousie University, Faculty of Agriculture's hatchery. The trials delivered data on production performance of the broiler chickens (feed consumption, body weight, egg production, feed conversion efficiency) as well as intestinal morphology (villus height, villus width, and crypt depth and villus surface area).
Total Project Cost: $119,605.89
Agri-Futures Nova Scotia CAAP Funding Portion: $72,509.00 **Actual:** $58,841.18

Project Number: NS0356CO (NS0356CO)
Project Name: Weed seed predation by carabid beetles for biological control in wild blueberry fields
Recipient: Wild Blueberry Producers Association of Nova Scotia
Weeds are a major yield-limiting factor in blueberry fields. Growers rely heavily on herbicides but desire alternate weed control methods to avoid problems with pesticide residues on fruit, pesticide resistance, and environmental and non-target issues. Many species of ground beetles have been found in NS blueberry fields. Several of these beetles eat plant seeds. The project wanted to determine whether H. rufipes and G. pennsylvanicus consume sheep sorrel and hairy fescue seeds and if commonly used insecticides have detrimental effects on the beetles. The research showed that the beetles can consume a significant number of sheep sorrel and hairy fescue seeds. Consumption happens in the field, and other species of ground beetles, and likely other insects, contribute to consumption of weed seeds. How much

seed-predation contributes to weed control in blueberry fields is unclear, but conservation of these insects could possibly be encouraged through habitat management strategies, and application of selective reduced-risk insecticides. These findings are significant for producers and consumers who want to lower environmental inputs of pesticides.
Total Project Cost: $56,115.30
Approved Agri-Futures Nova Scotia CAAP Funding Portion: $23,546.25 **Actual:** $20,915.00

Project Number: NS0357
Project Name: Identification of High Bush Blueberry Cultivars Suitable for Juice Production in NS and Cover Crops Suitable for Blueberry Plantings
Recipient: Horticulture Nova Scotia Association
This project addresses the future opportunity to expand the acreage of high bush blueberries grown in Nova Scotia, particularly to fill the juice market. This market requires a specific berry with high sugar content grown on a plant with a growth habit suitable for mechanical harvest. The cooperating producer wishes to expand markets to include juice produced from local farms, an expected 200-acre demand. The trial has been informative because this is the only place this group of cultivars is planted together in the same growing conditions and management system. Although results are preliminary, it is very beneficial to compare the cultivars compared to one another.
Total Project Cost: $20,147.50
Agri-Futures Nova Scotia CAAP Funding: $16,500.00 **Actual:** $16,500.00

Project Number: NS0358CO (NS0358CO)
Project Name: Evaluation of Club Root Resistant Broccoli Cultivars
Recipient: Horticulture Nova Scotia Association
The objectives of this trial were: to evaluate 8 cultivars of club root resistant broccoli and other cultivars in 8 plantings over the season on the farms of the two cooperating growers. As the purpose of the trial was the identification of Cole crop cultivars resistant to club root with the ability to produce a product suited to the Maritime market, the identification of such cultivars from this trial is a great resolution to this issue. The project results will be very beneficial to producers. The trial funding allowed researchers to test these cultivars over two growing seasons in a total of 23 plantings over a variety of soil conditions to determine the prevalence of Plasmodiophora brassicae in fields identified as unsuitable for Cole crop production due to the pathogen. In total, 26 cultivars of broccoli, Chinese cabbage and green cabbage were tested. A number of club root resistant cultivars and non-club root resistant cultivars were identified as producing good quality products. This is of value to all growers of these crops. The next steps are for farmers to test these cultivars in small quantities on their farms within their management systems.
Total Project Cost: $22,360.45
Agri-Futures Nova Scotia CAAP Funding Portion: $20,500.00 **Actual:** $20,297.08

Project Number: NS0359CO (NS0359CO)
Project Name: Improving Fertility in Ranched Mink using Whole Genome Selection
Recipient: Canada Mink Breeders Association
This project created seminal data in the form of new knowledge to guide the mink industry in improving performance in ranched mink. At the heart of this knowledge base lies the first draft sequence of the genome of the American mink, with its associated catalogue of variable positions (SNP markers). This represents foundational knowledge that was instrumental in enabling a pilot association study to identify genes underlying fertility in mink to demonstrate the efficacy of genome-based selection for mink improvement. The successful completion of the pilot study brings the mink industry several steps closer to the ultimate objective – the use of genomics information as a key component of breed improvement - which is currently the norm for most, if not all, other livestock species.
Total Project Cost: $202,920.20
Agri-Futures Nova Scotia CAAP Funding Portion: $174,721.50 **Actual:** $155,487.63

Project Number: NS0360CO (NS0360CO)
Project Name: Detection of the Aleutian Mink Disease Virus (AMDV) in Soil and Water Samples
Recipient: Canadian Mink Breeders Association

The objectives of this project were to develop methods of capturing, concentrating and detecting the AMDV in water and soil samples, and to detect AMDV in soil and water around selected mink ranches. Detecting of viruses in water and soil samples is difficult because of their low concentration as a result of their inability to replicate without a host cell and because of continuous degradation and dilution of the viral particles. On the other hand, and in contrast to most bacteria, small doses of a virus are sufficient to establish an infection in the new host. Viruses are more resistant to adverse environmental conditions and spread over a longer distance than bacteria. This project, for the first time, tested different methods for identification of AMDV in water and soil samples. It identified the most accurate methods of AMDV detection, which can help mink ranchers to determine if sources of water or their soil are contaminated with the virus.

Total Project Cost: $ 253,179.00

Agri-Futures Nova Scotia CAAP Funding Portion: $ 158,558.48 **Actual:** $158,558.48

Project Number: NS0361

Project Name: Understanding the market size and potential for Nova Scotia's traditional method sparkling wine

Recipient: Winery Association of Nova Scotia

Recently, many Nova Scotia (NS) wineries have begun investing heavily in the development and production of traditional method sparkling wines, variously labelled Méthode Classique; Méthode Traditionelle; Traditional Method; Traditional Méthod Sparkling; and Traditional Sparkling, among others. Meanwhile, NS wine enthusiasts may not recognize the differences between traditional method and carbonated sparkling wine. Further, these same consumers may be unaware of the labor and expertise required to produce the more expensive traditional method sparkling. This begs such questions as: Do consumers have a preference for one type of sparkling over the other? If so, are they willing to pay a premium for the elegant traditional method product? The project was cancelled due to change in business priorities, timing and anticipated project benefits.

Total Project Cost: $90,749.00

Agri-Futures Nova Scotia CAAP Funding: $69,786.00 **Actual:** $15,072.54

Project Number: NS0364CO (QP6651CO)

Project Name: Assessing the Effect of Various Pesticides on Predatory Mite Populations in Apple Orchards

Recipient: Centre de recherche agroalimentaire de Mirabel (CRAM)

Mites are a constant challenge for apple growers who, year after year, must monitor and control the populations with significant impact on apple quality. Predatory mites are the best way to adequately control phytophagous mite populations, since they can reduce the pesticide-related risks and increase farm profitability by reducing input cost. The aim of this study was to assess the effects of using pesticides on phytophagous/predatory mite populations in orchards in order to come up with a new approach for reducing the harmful effects of chemicals on pest control agent populations. The first part is highlighting the changes concerning mites in orchards between 2002 and 2011. The second part the use of fungicides in commercial orchards is compared with under semi-controlled conditions in orchards located in the Deux-Montagnes region. A third part was completed in collaboration with the IRDA in Monteregie commercial orchards and the Saint-Bruno experimental orchard. These data can be quickly used in orchards, in view of these results, apple producers will be better equipped to select the fungicides and insecticides that will increase the number of predatory mites.

Total Project Cost: $ 200,034.00

Agri-Futures Nova Scotia CAAP Funding Portion: $ 5,000.00 **Actual:** $4,367.35

Project Number: NS0367CO (NS0367CO)

Project Name: Effects of Water Quality on Pullet and Laying Hen Performance

Recipient: Nova Scotia Egg Producers

It is only in recent years that the egg industry has come to appreciate the possible impact of water quality on egg laying hens. The range of water quality provided to hens in Atlantic Canada is unknown, as are the effects of water pH and water mineral levels on the production performance and nutrient balance of laying hens. Understanding the range of water quality parameters and applying this knowledge to the egg industry will potentially provide benefits in the areas of production, cost efficiencies, animal care and food

quality. Results indicated that providing hens with drinking water ranging from an acid value of 6.0 up to a more alkaline value of 7.7 did not have negative effects on the production performance of laying hens on a short-term basis. Results also indicated that increased levels of magnesium and sulphate in the drinking water did not affect production performance of the laying hens as well as egg quality.
Total Project Cost: $83,128.10
Agri-Futures Nova Scotia CAAP Funding Portion: $122,423.00 **Actual:** $44,646.80

Project Number: NS0370CO (NS0370CO)
Project Name: Improving Harvesting Efficiency of Wild Blueberry Harvester Using Precision Agriculture Technologies to Increase Farm Profitability
Recipient: Doug Bragg Enterprises Limited
The purpose of the project was to develop and evaluate technologies to improve berry picking efficiency of commercial wild blueberry harvest. The following activities were performed: Hiring of highly qualified personnel who: interpreted, gleaned, organized and presented data in a manner which farmers and machinery manufacturers can understand and utilize in improving machine efficiency. Development and evaluation of Sensor Fusion System: The variation in fruit yield, plant height, slope and evaluation and presence of bare spots/weeds within blueberry fields, suggested that these parameters could be playing a significant role in wild blueberry fruit losses during harvesting. Evaluation of Berry Picking Performance Efficiency of blueberry harvester: By choosing an ideal combination of ground speed and header RPM, we can minimize the fruit losses to increase farm profitability.
Total Project Cost: $**231,703.67**
Agri-Futures Nova Scotia CAAP Funding Portion: $58,486.45 **Actual:** $58,486.45

Project Number: NS0371CO (QP6660CO)
Project Name: The cultivation of plants with high melliferous potential that may improve bee health (Apis mellifera) and agri-biodiversity of the agricultural landscape
Recipient: Fédération des apiculteurs du Québec
The goal of this project was to evaluate plants with high melliferous potential that can improve the health of honey bees and identify multifunctional uses for cultivating such plants. Phacelia, Buckwheat and the cruciferous plants are very likely candidates for associations favoring a large underground and aboveground biomass, as with Narrow Leaf Lupine, Borage, Cosmos, Mountain-bluet, Cilantro and Mammoth Dill, all of which could be associated in flower strips. These annual crops seem to offer interesting options for mixed bee pastures, combing rapid growth with prolonged blooming. Opportunities that have been developed and proven, and that are working include the following: Hyssop, Moldavian Mint, Coriander and various Basils, Nigellas and Chinese Chives. All these species are highly appreciated for the ease with which they are cultivated, and they have promising uses in a variety of products.
Total Project Cost: $147,715.00
Agri-Futures Nova Scotia CAAP Funding: $7,425.00 **Actual:** $7,425.00

Project Number: NS0372CO (QP6677CO)
Project Name: Sweet Potato Production under High Tunnels
Recipient: Centre de recherche agroalimentaire de Mirabel (CRAM)
The sweet potato (*Ipomoea batatas*) is currently a fairly marginal crop in Canada and in Quebec, but it is becoming more popular with consumers. Because of its climate requirements (sensitivity to cold), of consumer interest, and of its economic value, sweet potatoes would seem to be a promising crop for high tunnel production. This project assessed the impact of growing period and planting distance on yield for two production methods (field and high tunnel). The Georgia Jet sweet potato variety was used in the trials. Experimental field and high tunnel plots in were set up to assess four treatment combinations: 1) early planting date, 30 cm spacing; 2) traditional planting date, 30 cm spacing; 3) early planting date, 45 cm spacing; and 4) traditional planting date, 45 cm spacing. Climate sensors were installed in each area to trace certain whether parameters. At the end of each season, field and high tunnel harvests were assessed. As well, in 2013, the presence of insects was monitored in glue traps and on the plants to identify those species that could potentially pose problems for producers. An economic analysis of the 2012 and 2013 yields was carried out for each of the various treatment combinations for both production models.
Total Project Cost: $69,658.00

Agri-Futures Nova Scotia CAAP Funding: $2,750.00 **Actual:** $2,750.00

Project Number: NS0373CO (QP6676CO)
Project Name: Efficiency Assessment of Netting as a Pest-Control Method in High Tunnel Production Systems
Recipient: Centre de recherche agroalimentaire de Mirabel (CRAM)
Controlling pest insects is a major issue with high tunnel production, as with any type of production. Even though we can draw a few parallels with greenhouse production, some control methods specific to high tunnels need to be assessed further. The goal of the project was to assess the impact of net use as physical control method against insects in high tunnels. Two 15 m (50') sections of a high tunnel were set up for the tests. One section was surrounded with nets (Harnois insect screen) attached to the high tunnel's structure and the other did not have netting (producers' situation). Three crops were planted in each section: 1) bell pepper; 2) eggplant; and 3) cantaloupe. Screening was carried out during the season to monitor the populations of six insects: 1) striped cucumber beetle, 2) maize pyralid, 3) tarnished plant bug, 4) aphid, 5) Colorado potato beetle, and 6) thrips. Various weather sensors were also set up in each of the tunnel sections to observe the potential differences with these parameters. At the end of the season, harvested crops were evaluated.
Total Project Cost: $113,952.00
Agri-Futures Nova Scotia CAAP Funding: $5,000.00 **Actual:** $5,000.00

Project Number: NS0374CO (QP6662CO)
Project Name: A Study of Exclusion Nets in Quebec Apple Orchards
Recipient: Club Bioactin
Pest control in apple orchards is a challenge in eastern North America. Under organic management, the percentage of marketable apples often does not even reach half of potential harvest because damage is so considerable. Furthermore, orchards in said-conventional production use many pesticides and it would be advisable to deploy alternative methods to limit their adverse effects. A project was completed in 2012 and 2013 to do an initial assessment of exclusion net efficiency under Quebec conditions, more specifically: - Performance of both net types in preventing fruit damage; - Net’s impact on production quality; - Net’s impact on photosynthetic activity and temperature; - Spray product interception by netting; - Impact of rain membrane in preventing apple scrab.
Total Project Cost: $128,163.00
Agri-Futures Nova Scotia CAAP Funding: $10,500.00 **Actual:** $10,500.00

Project Number: NS0375CO (QP6675CO)
Project Name: Experimenting With Forage Soybean Production in Northern Agricultural Regions
Recipient: Fédération de l'UPA du Bas-Saint-Laurent
With this project, the UPA du Bas-Saint-Laurent, in collaboration with the farm school CFP Mont-Joli – Mitis and the firm Écosphère, wanted to experiment on growing soybean forage in a northern agricultural region, in order to assess the agronomical and economical potential of this culture for animal feed. The production team believed that soybean forage could offer an alternative to dairy producers in remote regions, in order to better face the increasing needs for quality forage and the ever increasing feeding costs in region. Performing trials at the farm school allowed to specify different production parameters and to offer a technology showcase in order to reduce the risk that introducing a new culture represents for farms.
Total Project Cost: $66,280.00
Agri-Futures Nova Scotia CAAP Funding: $5,250.00 **Actual:** $5,250.00

Project Number: NS0376CO (PE0378CO)
Project Name: Maritime Beef Council Levy Harmonization Project
Recipient: Maritime Beef Council
The purpose of this application is to secure the resources needed to implement one of two key projects to deal with the new realities of the beef industry in the Maritime Provinces and emerging issues which will affect the future of the regional beef sector. The second project is a regional Cost of Production and Protocol Development Project that will be submitted in the near future. Provincial producer organizations

and the Maritime Beef Council are concerned that movement of animals within the region and their departure to other regions of Canada for finishing is not resulting in the levy collection that it should. As well, these groups are concerned that varying levies and policies in the different Provinces may be influencing the movement and destination of cattle. Other than the recently installed NCO, there is currently no regional coordination of levy levels or mechanisms in the Maritimes, including the licensing of buyers. The Provincial producer organizations and the Maritime Beef Council want to be proactive in supporting traceability and national initiatives that could ultimately make the region's cattle more attractive in the marketplace.

Total Project Cost: $42,400.00

Agri-Futures Nova Scotia CAAP Funding: $11,800.00 **Actual:** $11,800.00

Project Number: NS0377

Project Name: Pollinator Bio-vectoring of Bio-control Agents to Combat Apple Pests & Diseases

Recipient: Nova Scotia Fruit Growers' Association

The project was a pilot study intended to demonstrate the potential and efficacy of bee-vectoring to deliver bio-control products to apple blossoms. The project was a success in that it demonstrated the delivery of bio-control agent to the apple blossoms. It was unable to effectively demonstrate control due to the low levels of product distributed. The project was able to demonstrate to growers the technology through an information luncheon and field tour. Results from the project highlighted several areas for improvement for future studies. Prior to this study, the technology had not been extensively tested in an orchard setting. The short bloom period in apple provides challenges over longer-blooming crops such as canola or sunflower. The benefit of this pilot study is that it highlighted those areas needing to be addressed in future for the technology to be efficacious in apple.

Total Project Cost: $19,140.36

Agri-Futures Nova Scotia CAAP Funding: $18,188 **Actual:** $16,073.73

Project Number: NS0378CO (ON0253CO)

Project Name: Provincial Dairy Farmers (P10) - Leveraging Standards for Technology and Software

Recipient: Dairy Farmers of Ontario

In the fall of 2012 nine provincial path finding reports were completed. They included audits of the IT infrastructure; business needs analysis, gap analysis, and remediation options. The next step in the process was to build a model for national shared services within a common infrastructure. This work effort was completed by January 2013. A national meeting with provincial general managers was held on February 14th to present the final strategies and plans for a national IT service for the Dairy Industry.

We are happy to report that, by March 31st, 2013, we obtained agreement from 8 provincial dairy boards to create a shared IT services structure. These approvals are for the project plans and budgets. The vendor contracting phase has now begun. This project has met and exceeded the objectives of the project, was completed within the planned budget, and was completed six months ahead of schedule.

Total Project Cost: $248,490.00

Agri-Futures Nova Scotia CAAP Funding: $8,137.00 **Actual:** $7,978.70

Project Number: NS0379CO (QP6703CO)

Project Name: Proposal to Establish a Promotion and Research Agency for the Canadian Strawberry Industry

Recipient: Association des producteurs de fraises et de framboises du Québec

Over the past 24 months, we have worked very hard to meet with as many stakeholders as possible involved in the production and distribution of strawberries in Canada, as well as in California. All of the producer organizations representing strawberry growers in Canada were met, with the exception of the association representing the Newfoundland strawberry growers, which did not respond to any of our correspondence. We also met with the technical advisors of the provincial agriculture ministries and Agriculture and Agri-Food Canada, the heads of the various provincial agricultural boards, as well as the principal researchers involved in Canadian strawberry production. As regards the representatives from the importation sector, we met and maintained contact with Canada's five produce marketing associations, namely the four provincial associations (Ontario, Calgary, British Columbia and Quebec), as well as the Canadian Produce Marketing Association (CPMA). It is important to note that we decided to

consult these associations because they represent over 90 per cent of the distribution of fruit and vegetables in Canada, as well as a majority of the Canadian strawberry importers potentially affected by this agency. We also met with the Metro and Sobeys distributors and with certain wholesalers. In the United States, we held an information meeting on October 7, 2013 with representatives of the California Strawberry Commission, including the Dole and Driscoll companies. Finally, we discussed the project with the Florida Growers Association.

Total Project Cost: $244,345.00

Agri-Futures Nova Scotia CAAP Funding Portion: $10,400.00 **Actual:** $8,714.14

Project Number: NS0381CO (NS0381CO)

Project Name: Genetic analysis of mink populations differing in response to infection by the Aleutian mink disease virus

Recipient: Canada Mink Breeders Association (CMBA)

Aleutian disease (AD) is the most serious health problem for the mink industry in almost all mink producing regions of the world. Infection with the Aleutian mink disease virus (AMDV) causes economic losses through adult and embryonic mortality, reduced reproductive performance and development of undesirable white hair fibers which drastically diminish the commercial value of the pelt. The disease has no treatment or vaccine, and more than 30 years of a test-and-cull strategy has not been effective in viral eradication in most regions of the world, including Nova Scotia. The solution: Utilizing the natural differences that exist among mink in response to infection by AMDV to create a tolerant population is a logical approach and is highly appealing to the mink industry. It is not, however, feasible for ranchers to select mink for increased resistance to the disease using traditional animal breeding techniques, because it is a prohibitively expensive undertaking. A large number of animals need to be challenged with the virus in order to identify those with natural resistance. This will result in increased mortality, reduced reproductive performance and low pelt quality for a number of years until the number of AMDV-tolerant mink has increased enough to maintain the breeding population. Mink ranchers are very interested in DNA markers which can help them to identify tolerant animals using a simple laboratory test.

Total Project Cost: $224,933.00

Agri-Futures Nova Scotia CAAP Funding Portion: $166,007.00 **Actual:** $166,007.00

Project Number: NS0384CO (QP6706CO)

Project Name: Botrytis cinerea fungicide resistance monitoring in strawberries, raspberries and vines

Recipient: Compagnie de Recherche Phytodata inc.

In the short term, this research project has highlighted the extent of resistance at the regional, provincial, and national level. This project also helped establish precious collaborations between the Phytodata research team and Quebec, Nova Scotia, Ontario and British Columbia advisers and researchers. This project also highlighted some shortcomings regarding the sampling approach often used in fungicide resistance detection processes. It is indeed common to sample between 1 and 10 specimens in a field or farm to assess the presence of resistance. This project helped illustrate the impact of the sample's size on the variability of the measured results. These results are important for the follow-up to the project. They demonstrated that we can easily get around the sampling-related variability issue by increasing the sample size, while reducing the number of sampled sites. Therefore, we demonstrated that the suggested approach is perfectly conceivable and would have many advantages: it would be less expensive than individual systematic sampling (per farm) and it would trigger a more accurate response given the greater number of samples. This would help see how the resistance issue evolves over time, predict resistance issues related to the introduction of new fungicides and measure changes within *B. cinerea* populations. The operating costs for sentinel farm follow-up have been set to $4,800/year, for a total of 100 processed specimens. It would be advisable, given the results achieved within this project, to suggest that Quebec sets up at least seven sentinel farms to be followed-up alternately every other year. In collaboration with producer associations, the MAPAQ and its RAP (crop protection warning network), seven farms should be selected in the Estrie, Sainte-Hyacinthe, Île d'Orléans, Trois-Rivières, Dunham, Napierville, and Lanaudière regions.

Total Project Cost: $111,782.00

Agri-Futures Nova Scotia CAAP Funding Portion: $9,456.00 **Actual:** $9,456.00

Project Number: NS0385CO (ON0259CO)
Project Name: Domestic Vine Certification Program
Recipient: Grape Growers of Ontario
The project was a national initiative to develop a Canadian grapevine nursery certification program and provide plants of high phytosanitary status to Ontario and other Canadian grape growing regions. These plants would exceed current standards available to industry by addressing a wider range of horticultural and economically detrimental viruses and other disease such as gall. The purpose of the project was to further develop a collection of virus-tested grapevines to supply nurseries with clean material that would be the foundation of a national domestic certification system. The purposes of the project served to advance efforts to increase the quality of grape and wine production across Canada and reduce Canada's dependence on imported grapevine material.
Total Project Cost: $263,700.00
Agri-Futures Nova Scotia CAAP Funding Portion: $10,815.00 **Actual:** $3,991.10

Project Number: NS0386
Project Name: Investigation & Evaluation of Efficiencies and Growth Opportunities of Organic Milk in Nova Scotia
Recipient: East Coast Organic Milk Co-operative (ECO Milk)
The specific objectives of this project were: to pilot and evaluate cost efficiency options for the transportation of bulk raw organic milk. To conduct product evaluations to targeted marketing activities. To investigate and evaluate the level of interest in transitioning from conventional to organic dairy production and identify and pilot the solutions and services required to facilitate the process. Objective 1 was not fully completed. Further consultation, investigation as well as a couple of pilot runs resulted in the proposed efficiencies not providing the anticipated level of cost saving and providing a reasonable return on investment. Objective 2 was completed satisfactorily. Objective 3 was partially completed with a successful pasture day, a series of farm visits, assistance provide for those currently in transition to organic and the development of a transition to organic dairy information piece. Until sales volumes grow it was felt that resources needed to be re-focused on growing sales of ECO Milk products.
Total Project Cost: $72,114.06
Agri-Futures Nova Scotia CAAP Funding: $49,850.00 **Actual:** $42,268.51

Project Number: NS0387
Project Name: Evaluating the feasibility of utilizing a commodity board to find solutions for the mink industry
Recipient: Nova Scotia Mink Breeders Association
The main objective of this project was to pathfind solutions for the mink industry that would enable the industry to have a vote which would determine if a newly created body could be affiliated with the Natural Products Marketing Council and whether a 'to be formed' commodity board would meet the needs of industry. This objective has been met. Through a series of activities and deliverables including research, preparation of draft and final documents and broad consultation sessions, the mink industry has become more engaged in discussing issues affecting its future. Without being able to hire a consultant, the Nova Scotia Mink Breeders Association would not have had the resources both financially and operationally to move ahead with this initiative and a lack of information and awareness would likely result.
Total Project Cost: $42,871.72
Agri-Futures Nova Scotia CAAP Funding: $30,529.46 **Actual:** $28,889.55

Project Number: NS0388CO (QP6695CO)
Project Name: Adapting a Tool for Scouting Cranberry Tipworm Adults for Cranberry Production
Recipient: Institut de recherche et de developement en agroenvironnement (IRDA)
The efficacy of two emergence traps has been tested in cranberry fields in Quebec in 2012. We determined that the Petri dish trap captured higher numbers of *D. oxycoccana* adults and was easier to use than the plate trap. Adults captured in the first trap could predict up to 88% of the variation of larvae observed in the field one week later. We determined that two locations in the field were the most adequate to set the adult monitoring traps all season long. Data from 2000 to 2013 were used to determine the degree days needed to obtain 5%, 50% and 95% levels of *D. oxycoccana* eggs, larvae and adults in the field, for the three generations. Finally, we demonstrated that using the Petri dish trap was

3.3 times less expensive than sampling the 100 shoots. In the short term, agronomists could use the Petri dish trap to monitor adults of *D. oxycoccana* conjointly with the software CIPRA to predict the presence of eggs, larvae and damages in the field. To provide a strategy to Quebec producers, establishment of an economic injury level for *D. oxycoccana* should be the next step following this project.
Total Project Cost: $185,083.00
Agri-Futures Nova Scotia CAAP Funding: $4,900.00 **Actual:** $4,684.39

Project Number: NS0390CO (ON0396CO)
Project Name: Defining, Targeting and Mapping Apple Sensory Preference of Future Ontario Consumers
Recipient: Ontario Apple Growers (OAG)
The ultimate objective of the CAAP project "*Defining, targeting and mapping apple sensory preference of Ontario consumers*" in partnership with the Ontario Apple Growers is to combine sensory and consumer science with applied genomics to identify unique sensory traits that will inform growers and breeders of the most desirable attributes for the selection of new apple cultivars in Ontario which meet consumer acceptance. The project started with the 2012 apple production season and continued in 2013 to complete 2 full years of research. Despite the late spring frost at bloom time in 2012, the Vineland Research and Innovation Centre's (VRIC) Heritage Orchard was left unaffected and thus was a source of many diverse apple varieties for sensory analysis. In total 63 apple varieties were examined for sensory attributes by a panel of trained tasters which resulted in a thorough description of each apple based on 18 different characteristics. The apple varieties were also tested analytically in the lab to determine the firmness, titratable acid, sugar content, browning and color. In addition, a subset of 19 apples representing the diversity in apple tastes was tested by 219 consumers from the GTA. This information was used to construct a "Preference Map" that describes what apples taste like and which are preferred. Consumers could be grouped as those liking sweet, fresh red apples (89%) and those liking crisp, fresh green apples (11%). As the project progressed, the apple sensory data was connected to DNA sequence information. The DNA for this element of the project was collected and shipped to Cornell University for sequencing. The development of DNA markers for selection of high quality apple taste and texture improves and accelerates the breeding program. DNA markers were adopted for 'storability' by examining genes that control ethylene production. The human sensory data was used to identify several locations on the apple genome that may be used in DNA-based apple breeding for high quality fruit with market appeal. This is the first comprehensive testing of Ontario apples with Ontario consumers that provides direction in marketing and breeding of apples to consumers. It is significant in contributing to the success of the Ontario apple breeding program and concentrates the focus on introduction, creation and selection of apples that are most likely to be suited to Ontario consumers. Information derived from this project enhances the knowledge capacity of Ontario apple producers and encourages planting apples cultivars where the consumer market acceptance is well understood and positive.
Total Project Cost: $162,657.00
Agri-Futures Nova Scotia CAAP Funding: $11,013.00 **Actual:** $9,981.61

Project Number: NS0392CO (PE0394CO)
Project Name: Bovine Leucosis in Maritime Dairy Herds
Recipient: Dairy Farmers of Prince Edward Island
Bovine Leucosis is a disease that infects over 20% of dairy herds in the Maritimes. As many as 85% of cows in infected herds have been diagnosed with the disease. The disease effects milk production and the ability to sell cows that come from infected herds. The project objective is to study the Dairy Herd Improvement Database, document lifetime impacts and work to eradicate the disease from Maritime dairy herds. Previously collected data by the research team from UPEI and the University of Guelph. This previous study was a national effort (Production Limiting Diseases Committee - PLDC) conducted from 1998 to 2000. In that study, approximately 12,000 cows across Canada were blood sampled for BLV testing. The impact of BLV is not acute. Infection continues for life and may have subtle impacts that are cumulative over the life of the animal. Now that enough time has passed, we can examine outcomes such as "life-time" productivity, reproductive performance and culling risk (survival in the herd).
Total Project Cost: $82,000.00
Agri-Futures Nova Scotia CAAP Funding: $23,274.00 **Actual:** $23,274.00

Project Number: NS0393CO (NB0317CO)
Project Name: Evaluation of Malting Barley potential for Atlantic Canada
Recipient: Atlantic Grains Council
The objective of the project "Evaluation of malting barley potential for Atlantic Canada" was to build infrastructure and industry-driven support to growers looking to add value to barley grown in Atlantic Canada. Malting barley can almost be considered to be a different crop compared to conventional feed barley. This project builds a foundation for the potential development of malt barley production in Atlantic Canada by measuring the quality and suitability of malt barley grown in the Maritimes. Results and information generated by this project have shown that there is potential to achieve quality malt barley in Atlantic Canada, and has initiated the discourse for the discussion of malting barley production in Eastern Canada. As malt barley is currently worth triple the value of feed barley, information and processes developed through this project will provide support to growers seeking to improve economic returns of management decisions to include malting barley as part of their cropping systems. This project has shown that malting barley production in Atlantic Canada is possible; a significant knowledge infrastructure has been developed which will contribute to the success of malt barley production in the short term, will provide support for further work on malt quality, and will facilitate the further development of micro-malting operations over the long term. There is still a significant amount of work to be done to develop a malting barley industry in the Maritimes. The development of a suitable malting regime is not easily done. There was a significant amount of work that went into developing malting protocols for East Coast malt. Several quality parameters are controlled by management decisions made at the producer level. Further agronomic work on malting barley production on the East Coast is required.
Total Project Cost: $61,800
Agri-Futures Nova Scotia CAAP Funding Portion: $15,517.66 **Actual:** $15,517.66

Project Number: NS0395CO (NS0395CO)
Project Name: Characterization of rootstocks for Honeycrisp™ production and storage
Recipient: Nova Scotia Fruit Growers' Association
The project was successful in achieving the objectives. Due to the time required for analysis and the time frame of this project some deliverables have not been achieved. As a result of this project, a protocol for evaluating gene expression in Honeycrisp has been developed and used to evaluate the rootstocks for disease resistance and defense response. The results from this project improve our understanding of the development of Honeycrisp on a wide range of rootstocks. As this project was only for one year and represents the second year of production for these trees, the information gained provides a foundation to examine the change in these trees as they establish.
Total Project Cost: $35,595.91
Agri-Futures Nova Scotia CAAP Funding Portion: $28,328.40 **Actual:** $26,044.70

Project Number: NS0396CO (NS0396CO)
Project Name: Advancing Competitive Tree-Fruits (ACT)
Recipient: Nova Scotia Fruit Growers' Association
Apple growers in the Maritimes are striving to compete in the global apple industry and want to distinguish themselves from other regions by introducing new cultivars to consumers. This project is an initial attempt to develop an efficient chain of procedures for the evaluation of new apple cultivars in the Maritimes. The results of this project show that every new apple cultivar is unique and has potentials beyond face value. Further investigations are necessary to determine the cultivars that will serve the industry best in the future. The take-home-lesson from this project is that there is an enormous amount of investigative research to be done in the realm of apple cultivar differences. Within this body of research there is the potential to discover and develop new bio-control products and procedures for insect pests and diseases. The research team expects to continue the investigation of new apple cultivars for the Maritime Tree-Fruit Industry.
Total Project Cost: $53,639.38
Agri-Futures Nova Scotia CAAP Funding Portion: $43,380.00 **Actual:** $36,075.60

Project Number: NS0397CO (ON0507CO)
Project Name: Making Genomics Relevant to Beef Breeders Today
Recipient: Beef Improvement Opportunities

This project has generated a great deal of interest and enthusiasm amongst beef breeders. While they may recognize the value in having their animals included in all the all important reference data set of genotypes matched with phenotypic information, they are anxiously awaiting results that they can use today. This project was specifically aimed at bridging the chasm that currently exists between the science and the application of genomics in the beef industry. The project results are significantly to breeders as they were given genetic evaluations on traits for which they had none before while and researchers as the project helped to build the reference data base of genotypes matched with solid phenotypic data. Actual outcomes were very positive with strong breeder interest, solid support from project partners and strong interest in the press which further engaged producers in the topic of genomics.
Total Project Cost: $250,500.00
Agri-Futures Nova Scotia CAAP Funding: $11,430.00 **Actual:** $10,780.76

Project Number: NS0399
Project Name: Aphid monitoring in Nova Scotia for improved virus management in strawberries
Recipient: Horticulture Nova Scotia Association
Following the discovery in 2012 of virus disease caused by a complex of two aphid-spread viruses in strawberry, this project began to address the disease. The primary target group was strawberry producers in Nova Scotia as this is the group most directly impacted by these viruses. The objectives of this project were: 1) to evaluate the relative distribution of aphid species across the province. 2) To monitor the population levels of the strawberry aphid through the 2013 growing season. 3) To conduct a mid-summer virus survey of farms to assess the distribution and levels of infection through the province. The virus greatly impacted the Nova Scotia strawberry industry in 2013, and the results are significant especially to the many strawberry producers across the province that depends on strawberry production to make a living. The secondary effects would be on markets and retailers who sell the product, and on the consumers who purchase fresh local berries.
Total Project Cost: $120,821.03
Agri-Futures Nova Scotia CAAP Funding: $92,000.00 **Actual:** $91,960.50

Project Number: NS0400
Project Name: Epidemiology of the barberpole worm, Haemonchus contortus, in sheep in Nova Scotia
Recipient: Sheep Producers Association of Nova Scotia
Several species of nematodes cause health problems in small ruminants. The barberpole worm, *Haemonchus contortus* has emerged as a serious threat to pasture raised sheep, increasing from an occasional problem in hot summer to the most important pathogen for lambs, probably from late July to October, and for ewes around lambing. It has also rapidly developed resistance to both classes of wormers available in Canada. Discussion with producers suggest that serious health problems and losses in growing lambs, and ewe deaths after lambing, are becoming more common, and were widespread in 2012. The purpose of this project, therefore, was to analyze random samples from as wide a geographical area as possible in order to increase the understanding of the epidemiology of this parasite and help the sheep industry cope with this emerging threat to the sustainability of this sector. The project analyzed faecal samples from lambs, mature ewes and rams, goats and lamas. Resistance to one or both available anthelmintics was seen in 7 of 8 participating farms. The project concluded that resistance to the two available classes of anthelmintics is probably widespread, and Haemonchus is a serious problem for the sheep industry in this region.
Total Project Cost: $45,607.65
Agri-Futures Nova Scotia CAAP Funding: $28,600.00 **Actual:** $28,600.00

Project Number: NS0401
Project Name: Assessment of Environmental Stewardship Programs in Nova Scotia
Recipient: Nova Scotia Federation of Agriculture
This report provides recommendations on how to improve stewardship practices that were identified as lacking. This included enhancing the Environmental Farm Plans program, collaborating with other Atlantic provinces, developing an industry hotline for environmental issues, improved education, funding incentives and more research on cropping practices and disposal methods for farm waste items such as silage plastic. A list of future fact sheets, newsletter articles and other educational resources has been

generated as part of this project. This will be a valuable resource to EFP staff, especially as they will use this information and recommendations to help improve upon the program.
Total Project Cost: $30,177.58
Agri-Futures Nova Scotia CAAP Funding: $22,000.00 **Actual:** $22,000.00

Project Number: NS0402
Project Name: Development of Occupational Health and Safety Resources for Nova Scotia Farms
Recipient: Nova Scotia Federation of Agriculture
The Occupational Health and Safety Act and its regulations apply to all workplaces in Nova Scotia. Despite a legal obligation to comply with the Occupational Health and Safety Act, Nova Scotia farmers are often unaware of the occupational health and safety standards required to be met or do not recognize the risks of non-compliance. The main objective of this project was to develop resources and tools to assist farmers in the development of on-farm health and safety plans. By developing occupational health and safety resources, the Nova Scotia Federation of Agriculture and Farm Safety Nova Scotia have increased awareness of health and safety and the industry's level of compliance.
Total Project Cost: $28,951.95
Agri-Futures Nova Scotia CAAP Funding: $26,000.00 **Actual:** $22,340.13

Project Number: NS0404
Project Name: Piloting a model for Inventorying Christmas Trees in Natural Stands
Eligible Recipient: Christmas Tree Council of Nova Scotia
Christmas tree cultivation, formerly under the Department of Natural Resources, has recently been recognized as an agricultural commodity. One of the major objectives of this project was to develop an efficient mapping and sampling procedure for Christmas tree growers that would meet the inventory requirements of business risk management programs under the Department of Agriculture. The accurate maps and inventories will aid growers in many other aspects of Christmas tree cultivation.
Total Project Cost: $18,595.94
Agri-Futures Nova Scotia CAAP Funding: $13,600.00 **Actual:** $13,349.90

Project Number: NS0405CO (QP6782CO)
Project Name: Assessing the Effectiveness of 11 Insecticides against Spotted Wing Drosophila (*Drosophila Suzuki*) With Summer Strawberries and Day-Neutral Strawberries
Recipient: Carrefour industriel et expérimental de Lanaudière (CIEL)
The objective of this project was to evaluate the tolerance and efficacy of several insecticides to control the spotted wing drosophila in June bearing and day neutral strawberry production. The fruit growing industry must deal with a new insect that has been introduced to North-America since 2008, namely the spotted wing drosophila (SWD). This insect has raised significant concern because since 2011 it has been found in healthy fruit of several strawberry cultures in Canada and other berries, causing important damages. The results of this project allowed for the conclusion that all the insecticides tested were safe for the strawberry culture and did not exhibit any reduction in yields. Unfortunately, the results obtained did not allow for the identification of one or several efficacious insecticides that would reduce the number of drosophilae in the fruits nor reduce the damages caused by the insect. Nevertheless, the project allowed for the documentation of a new fact, which is the presence of a large number of drosophila species in the fruit. This observation has not been previously documented in Quebec, even if similar observations were made by the team in 2012. Furthermore, this raises several questions and requires further study in future research projects.
Total Project Cost: $50,827.00
Agri-Futures Nova Scotia CAAP Funding: $5,000.00 **Actual:** $4,667.53

Project Number: NS0406CO (QP6792CO) Project Name: Maturity evaluation of three major grape varieties cultivated in Quebec, and the implementation of a maturity monitoring network for grape growers
Recipient: Centre de développement bioalimentaire du Québec inc.
This project studied the maturity of the Marechal Foch, Frontenac and the Vidal grape varieties during six to seven weeks, once per week, at two or three sites located to Ile-d'Orleans, in Saint-Paul-d'Abbotsford

and in Dunham. Technological parameters, phenolic maturity and aromatic maturity were analyzed to determine the best indicators of phenolic and aromatic maturity for these varieties.
Total Project Cost: $101,523.00
Agri-Futures Nova Scotia CAAP Funding: $10,000.00 **Actual:** $9,669.94

Project Number: NS0412CO (QP6799CO)
Project Name: Study on the efficiency of different spraying techniques in cranberry production in Quebec
Recipient: Institut de recherche et de developement en agroenvironnement (IRDA)
The cranberry production has increased in Quebec since 1999; the exploited area has increased with 10% per year. Quebec is now the third world producer, behind the US states of Wisconsin and Massachusetts. The yield for farms has increased with 61% in 10 years and is considered as the highest in North-America. Since 2000, all producers have adopted integrated pest management strategies and have subscribed services from the CETAQ. Cranberry fields need 1.5 to 5 insecticides treatments per season depending on the farm being conventional or certified organic. These insecticides mainly target the black-headed fireworm and the cranberry fruitworm; however, 40% of fruit damage still can be observed at the end of the season in organic farms. Producers and agronomist suspect that the actual spraying techniques could have something to do with this high level of damage and they believe that this situation could be improved. The general objective of this project was to evaluate the efficacy of different spray strategies used in Quebec cranberry production in order to increase the penetration and cover rates as well as the effectiveness of plant protection products used against pest.
Total Project Cost: $115,687.00
Agri-Futures Nova Scotia CAAP Funding: $8,400.00 **Actual:** $8,004.78

Project Number: NS0413CO (MB0451CO)
Project Name: Humane Euthanasia of Poultry
Recipient: Manitoba Egg Farmers
The overall goal of this euthanasia research was to develop and construct a mobile mass euthanasia system that is humane for poultry, safe for human operators, acceptable to the public, and allows euthanasia activities to be completed in timely manner. In the current project, the effectiveness and welfare benefits of N2 euthanasia for poultry were clearly demonstrated. Optimal operation parameters of this euthanasia method were established. As a result, a full-scale mobile N2 mass euthanasia system is under development. A design team led by PAMI has prepared a detailed work plan to design, construct and commission a prototype Mobile Mass Euthanasia Unit for swine and poultry based on the results generated from this project.
Total Project Cost: $58,363.00
Agri-Futures Nova Scotia CAAP Funding: $3,034.85 **Actual:** $3,034.83

Project Number: NS0414CO (MB0453CO)
Project Name: Validation of Two Formulas for Estimating Available Nitrogen from Manures
Recipient: Dairy Farmers of MB
This study was conducted in the growing season of 2013 in order to test the efficacy of two formulas for estimating the available nitrogen in five manure types. The study was conducted at two sites, on a loamy sand at Carman and on a clay soil at Glenlea. The study applied these five manures using two formulas for estimating the available N in manure for a total of ten treatments. The current formula that assumed 75% of ammonium-N plus 25% of organic N is available and a new formula that assumes that 50% of ammonium N and 12% of organic N is available. In addition to the ten manure treatments, a fertilizer treatment was added and a control where no manure or fertilizer was added for a total of twelve treatments.
Total Project Cost: $128,000.00
Agri-Futures Nova Scotia CAAP Funding: $3,474.70 **Actual:** $3,415.22
