FINAL OUTCOMES REPORT

OPTI-CART

1.0 - Project Summary

ERA PROJECT ID:
B01610273

Title of Project:
Opti-Cart

Name & Information of Recipient Contact:
Andrew Lodge; Optimal Agricultural Equipment Ltd.

Name of ERA Project Advisor:
Ibrionke Popoola

Start Date of the Project:
06/01/2021

Project Completion Date:
03/30/2023

Technology Readiness Level at Project Initiation:
Level 8

Total Actual ERFA Funds Received (including holdbacks):
$637,500.04

Total Actual Project Costs:
$1,377,412.84

FOR Submission Date
November 30/2023

Short Project Description with High Level for the ERA Website:
We have developed a grain cart/seed tender unit to be used as a dual-purpose machine in the grain farming industry. It is used as a grain cart in the fall during the harvest season and a seed tender cart in the spring to deliver seed and fertilizer to a seeding tool. It has a patented process to clean out augers of material. Its purpose is to increase efficiency in time and fuel savings. The prototype unit is built and will be tested by the end of 2020. The proposed project is to redesign and build 4 new units to further test and develop so it can be commercialized into the market. Redesign of Existing Prototype to ensure it meets customer expectations. Manufacturing of Opti-Cart 1-4. Testing and Commercialization Activities.

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5.0 - Executive Summary

Overall, the project was a success. Optimal Agricultural Equipment Ltd. was able to build 3 units that were able to function as a Grain Cart and a Seed Tender to air drills in the field. The purpose of building 3 units and not just one was so we could demonstrate 3 units across Alberta instead of just one. This way, marketing and commercialization could happen in a timely manner to ensure a higher chance of successfully getting this product to market. It was determined that farmers would need to demonstrate the units during their complete seeding time in the spring to prove out the efficiencies of operating one. This would limit the ability to demonstrate to more than one farm each season. The Carts were built with 3 internal tanks with the ability to control the flow of product from each tank separately or all together (whichever the operator chose to do). This way the Cart could be used as a muti-purpose machine. A scale system was installed to aid in the amount of product being loaded and unloaded, making unloading faster and more efficient. A blower system was made functional to clean out the auger delivery system when switching products being unloaded. The units were tested and marketing the idea to farmers in Alberta has begun. With the help of CARE Industries Ltd. obstacles and challenges were overcome. All Milestones were achieved. The technology used was refined throughout the Project so that the Opti-Cart met the expectations put forth in the FPP. The Project was tested and verified by us and the end users who will benefit from operating these machines. The project achieved what it had set out to accomplish. The fill times for air drills used in the spring seeding application were far lower than what is traditionally done in today's practices. Meaning farmers could have the ability to complete their seeding much faster in the spring or even seed more acres with the same machinery used today. Unfortunately, the environmental benefits of the Opti-Cart are minimal. We were able to achieve fuel usage savings, however not enough to significantly lower GHG emissions.

6.0 - Project Description

Introduction

The technology and idea behind the Opti-Cart was to design and build a multi-purpose unit to improve operational time for the farmer, improve fuel efficiencies primarily in the spring seeding operations, and combine two distinct operations into one piece of equipment, thereby reducing the maintenance and manufacturing resources of the industry. Optimal Agricultural Equipment

Ltd. (Optimal Ag.) has designed and tested a process to clear out material from the augers between switching from fertilizer to seed while filling air tanks so there is no contamination between products. This functional and operative success led Optimal Ag. to apply for and receive an approved patent with the Canadian Intellectual Property Office: Patent CA 2985232, Grain Cart with Air Nozzle.

The Opti-Cart can now act as two pieces of farm equipment. The first, a grain cart which is widely used in the fall during harvest process. The second, a seed tender cart which will become a new standard of use in the spring to fill air drills anywhere in field much faster than the current technology used.

Background of the Project

During the typical seeding process, the seeder can sit idle anywhere from 3-5 hours a day while it is being filled or driven across the field to the truck to be filled. These operational inefficiencies add extra hours on the tractors as well as burn unnecessary fuel as the tractor needs to be running to transit the cart and fill the air tanks. Furthermore, delays in seeding due to inefficiency and downtime limit the farming acres and quality as the more seeding that can be done in the optimal timeframe, the better the chance of a higher yield.

The alternative method or competitor to the Opti-Cart are Air Tanks. Air Tanks are typically filled using an auger or conveyor that is attached to the air tanks. It is operated with hydraulics from the running tractor connected to the air drill. They are maneuvered under a truck that is waiting at an approach in the field. The truck has two or three compartments containing fertilizer and seed. The auger or conveyor needs to be shifted from one tank to another to fill multiple tanks on the air tank. This process can take anywhere from 30 minutes to 60 minutes per fill depending on tank size.

Project objectives

The following were the overall objectives of the project: They are a copy and paste of the original objectives.

Redesign the Opti-Cart with the improvements identified from V.1.0 prototype operation by December 2020. Improvements will be sourced from operational feedback, customer feedback, manufacturing input and engineering data. The outcome will be a completed V.2.0 product design, approved and ready for manufacturing.

Manufacturing of Opti-Cart V.2.0 is estimated to commence on April 1 and will deliver two (2) completed Opti-Cart V.2.0 units by April 2021. These units will be fabricated, assembled, and tested in Lacombe County, Alberta. The project will employ a Project Manager, Welders and Mechanics for the manufacturing period in Lacombe County, Alberta.

Three (3) Opti-Cart units will be deployed for operational testing in seeding operations at farms in Alberta. We are identifying the most promising options and will be assisting the seeding operations with an aim to identifying best practices, workflow changes and metrics that will support the marketing and commercialization of the product.

In November 2021, we will look at the performance and feedback received and make any improvements that are needed to V.2.1 and approve for release by December 2021. Manufacturing of the next two (2) units will commence January 2022 and these two units will be ready for testing in April 2022.

Prove out the following to operators.

- Less fuel used per acre and per year.
- Seed more acres per day
- Less running hours per tractor per year
- Smaller sized tanks can be purchased and as such smaller units on our roadways.
- One unit can fill multiple seeding tools on same farm.
- Producers can use one piece of machinery for two different jobs, seed tender and grain cart.

All of these points were achieved. An overall conclusion and plan for the future is explained in the Project Scope of this report.

Performance/success metrics identified in the Contribution Agreement

Working together with our partners at ERA, we were able to successfully work through the Contribution Agreement. Some changes and small variations were communicated and understood by the ERA allowing the Project to ultimately reach a complete and matched process that was set forth in the initial proposal.

Discussion on any changes in the Project during the lifecycle of the ERA funded Project scope

We changed the scope from 4 units to 3 units as detailed in the Project Change Request that was submitted and approved by ERA. There was an amending agreement signed on November 28, 2022. Due to the pandemic, supply chain issues of some of the major components such as the undercarriage and tracks prevented us from being able to attempt to build 4 units. Furthermore, there were significant changes that needed to be made to the Prototype unit. Design changes to the vertical auger to eliminate some vibrations and shaking which is affecting the performance; design changes to the gates/doors to provide more control to meet the farmers requirements and evaluating changing the blower control to an on/off function which required the use of a clutch.

Technology risks

The risks identified at the time include performance risk of the product, manufacturing efficiency of the product, market adoption of the product and processes and possible disruption of the current market from an unknown technology.

Performance:
We struggled for a long while to properly activate the blower on the unit as well as achieve a complete cleanout of material via forcing air through the augers. The initial belt tensioning system that was originally designed on the prototype did not work and we needed to come up with an alternate way to activate the blower. It was determined that we needed more air flow and a tighter clearance between auger flighting and tube to clean material from the augers. Instead of a belt tensioning system to activate the blower we use a centrifugal clutch. The blower is also now mounted and driven off the back of the unit instead of the front.

Manufacturing efficiency:
A re-design was performed once the proto-type unit was completed. One of the design changes here was to use more of a “bolt together” system as opposed to a “welded” unit. While we had hoped this would increase our efficiency, it did not. As a result, the cost to build units 2 and 3 were roughly the same. These costs are too high to be able to market Opti-Cart at any sort of profitable return.

Unidentified Risk:
This project was completed throughout the period of the Covid-19 pandemic. As we all know, this created a mountain of challenges. Including staffing, availability of parts, and the communication with other suppliers to continue to design and find solutions to performance issues as well as manufacturing efficiencies. Another unidentified risk has been inflation. This has dramatically increased costs far and above our initial proposal of funding needed.

Market adoption:

Currently we are attempting to acquire some market adoption of this product. As we proposed, the demonstration of the Opti-Cart is a key part to the path to successful commercialization. We have had a few setbacks as far as tractors not functioning properly during our demos and this has slowed the process down.

7.0 Project Work Scope

Experimental procedures/methodology

As mentioned above, the technology of blowing out augers developed over continuous testing and failures. We were able to successfully overcome our issues. Basic experiments of increasing size of the blowers, as well as tightening auger to tube clearance were performed.

Technology development, installation, and commissioning description

The development of wireless control of the hydraulics.
Displaying proper weights of products.
Being able to operate the unit with a programmable software that automatically unloads a pre-set amount of product.
While these functions are not new technology, they needed to be developed to work in a seed tender application of the Opti-Cart as well as a grain cart application. Proper software development needed to be completed to achieve this. Design and Installation of the hardware were completed.

Overall Project achievements relative to stated objective and performance metrics.

We set out to refine an idea and prototype unit that had already been partially built and tested. The ultimate goal was to prove that filling an air tank in the spring could be done faster and more efficient than traditional methods. With the help of ERA funding we were able to complete this project. Here are the accomplishments made throughout the project.

-Decrease overall fill time of an air tank:	Achieved
-Blowing out products when switching from seed to fertilizer:	Achieved
-Develop efficient and properly functioning software and hardware to control the flow of products out of Cart.	Achieved
-Prove out faster fill times to multiple units	Achieved
-Seed more acres per day	Achieved
-Lower fuel usage by producers	Marginal

We were successful in designing a product that could be used as a grain cart and a seed tender. We were able to fill air tanks in the middle of a field being seeded in 7 to 8 minutes. This is a dramatic decrease in minutes compared to the current fill times of air tanks. Most operators of seeding tools will agree that it takes between 40-50 minutes to fill their seeding tools.

Quantitatively, the objective of having 3 units operating in the spring of 2023 was not reached. There were major components that were unable to be shipped to us due to supply issues created by the pandemic. As such we attempted to fully manufacture and operate 2 units in central Alberta. One of those units ran successfully southeast of Calgary. The other was by Three Hills, AB. With no fault of the Opti-Cart itself it was unable to be tested as the tractor pulling it had a major breakdown. We were unable to acquire a different tractor to continue its testing. The positive here is that there is simitry between the final 2 units manufactured during the project. These units now operate and function using the same components and software.

Results of experiments, model simulations

Results of testing this spring were good. We were able to prove out a more efficient fill time of air tanks being pulled behind air drills in the seeding procedure. The Opti-Cart was able to tender to 3 different seeding tools on the same farm.
Wireless operation of the units' controls was achieved, as well as proper scale readouts for accuracy of loading and tracking products used like seed and fertilizer.

Analysis of results

While we were successful in decreasing the amount of time it takes to fill air tanks, we were unable to achieve a large enough fuel savings for operators. It was originally thought that by reducing idle time of tractors and trucks during a normal fill sequence that is done today that we could save fuel. However, by operating the tractor that runs the Opti-Cart and working it the fuel savings were very minimal.

8.0 Commercialization

Discussion of any advancements made toward commercialization, commercial deployment or market adoption.

As of November 15/2023, there has not been an Opti-Cart purchased and put into the market. Currently we are demonstrating one in northern Alberta. The end client is very interested and would like to see it perform in a spring seeding operation. We have attended farm shows and received a lot of interest in the product. Customers have even tried to build and develop such carts on their own. The efficiencies of using a seed tender to fill air tanks is well recognized. As the product does not have a major manufacturer behind it and the Cart has a substantial cost compared to other grain carts, we feel this is causing some hesitancy in market adoption. There has been significant interest by other manufacturers to further develop this type of technology. We will continue to market the Opti-Cart via demonstrations and salesmanship.

Description of technology advancement over the course of the Project

As we had already built a proto-type machine before the Project began, we were well on our way in developing the technology. The fine adjustments came in the form of wireless technology to operate the unit. The software to operate the scale system and functionality of the unit were adjusted all throughout the Project.

For example, In order for the Opti-Cart to auto-unload a pre-set amount of product the scale system needed to by calibrated and tested. We also needed a user-friendly way to enter the amounts into the touchscreen. It is now at a very usable stage and works on a consistent basis. The augers on the first machine had quite a bad vibration and we were able to re-design and better the manufacturing process to remove those vibrations.

Our doors that controlled the flow of material were also re-designed to allow better control and movement while opening and closing.

9.0 Lesson Learned

Discussion of any challenges, delays or obstacles encountered during the Project.

Covid-19 and inflation were the two largest challenges faced during the Project. The delays caused by the pandemic were extremely costly as far as time goes. Also, the continued disappointment of these setbacks caused the momentum of development to slow. Excitement, confidence, and the desire to achieve goals, are all real factors in developing new ideas and having them reach reality.

When the project started, we felt we had a handle on costs. As the project went on it became apparent our labour cost here in Alberta was getting the best of us. Our labour costs are approximately 35-40% higher than neighbouring provinces such as Saskatchewan and Manitoba. The labour hours that were estimated to complete the project were underestimated and as such our manufacturing costs were significantly higher.

Important lessons learned, including learnings around business, government policy, regulation, commercialization, technology development, etc.

An amazing, yet disappointing experience! Although we have not hit a home run with this project, I feel our company and many people involved with it have gained a lot of knowledge in the business of developing new ideas. It has been said many times amongst our group, “If it was easy, everybody would do it”. Would we like to lose money again? No. Would we be able to potentially grab a new idea and develop it again. Yes.

On the topic of government policy. It did make our group become responsible in documented and planning the project more completely. However, the resources and time it takes internally to acquire and maintain communication with government funding groups and programs was not worth it overall. Would we consider using government to fund another project? Maybe, however our company would need to be a lot larger and be able to support employees with the repetitive paperwork required to maintain communication with government.

In the future we believe being involved with a larger manufacturer would greatly benefit the commercialization and technology development of such projects.

10.0 Environmental Benefits

Unfortunately, we were unable to achieve a large enough fuel savings while using the Opti-Cart as a seed tender. However, in saying that, if the Opti-Cart were adopted by the market, producers would not need to operate large equipment. A smaller air tank could be purchased, and smaller tractors could be used to tow these seeding tools.

10.1 Emissions Reduction impact

The objective of having 3 units operating in the spring of 2023 was not reached. There were major components that were unable to be shipped to us due to supply issues created by the pandemic. As such we attempted to fully manufacture and operate 2 units in central Alberta. One of those units ran successfully southeast of Calgary. The other was by Three Hills, AB. With no fault of the Opti-Cart itself it was unable to be tested as the tractor pulling it had a major breakdown. We were unable to acquire a different tractor to continue its testing. The test results below are from two units. We found litres consumed per bushel of product unloaded off the Carts to be consistent.

The best explanation of emissions reductions and even possible future reductions can be found in these final test results and Appendix (attached).

Overview of test results for GHG reductions by use of Opti-Cart.

SPRING OF 2023
FINAL TESTING RESULTS

Once again, our testing program did not go as planned as we had a major breakdown of one of the tractors that was being used to pull one of the Opti-Cart's. We were able to get test results on fuel usage via some other farms and were able to get great project test result out of one of the Opti-Carts and one out of the other. Interestingly, the results were very similar even with limited testing on one.

This season we were able to test using larger Air Tanks as to get a better sample size as well. Baseline tests were very similar to initial testing, but the project

results were better. Some of which are due to a better understanding of how to use the Opti-Cart but also the auto-unload feature.

Baseline and Project Conditions:

For Baseline testing results we used 2 farms that load a 950-bushel Bourgault air tank. We did six different tests. The tanks were not completely empty each time so the time taken to fill varied as it would in normal usage.

For project testing Palin Farms Ltd. only uses a seed tender to fill, we were able to achieve the majority of project test results from this farm. This farm fills 700-bushel air tanks.

James Main had the other Opti-Cart, and we were only able to do one test here as the tractor pulling the Opti-Cart broke down. We did achieve a test result however. This farm fills 950-bushel air tanks.

Baseline Test Results:

Used one truck to bring product (uses 2.42L/hour while idling)

Test #1	Approx. 950 bu	45 minutes	15.9L consumed by tractor
			1.82L consumed by truck
		Total fuel used	17.72L
Test #2	Approx. 950 bu	40 minutes	11.73L consumed by tractor
			1.61L consumed by truck
		Total fuel used	13.34L
Test #3	Approx. 950 bu	38 minutes	10.98L consumed by tractor

			1.53L consumed by truck
		Total fuel used	12.51L
Test #4	Approx. 950 bu	45 minutes	16.28L consumed by tractor
			1.82L consumed by truck
		Total fuel used	18.10L
Test #5	Approx. 950 bu	46 minutes	14.01L consumed by tractor
			1.85L consumed by truck
		Total fuel used	15.86L
Test #6	Approx. 950 bu	50 minutes	18.93L consumed by tractor
			2.017L
		Total fuel used	20.95L

Travel time from when the air drill was lifted out of the ground and driven to an approach always varied. It was observed that it took approximately 2.2L to travel about 3.5 minutes to a fill area towing the air drill to a truck. It took the same amount of time in the project and consumed the same amount of fuel to pull the Opti-Cart out to the seeder.

These fuel usage results are measured once the truck was lined up to the air tank and began to fill. As operators sometimes run the tractor at a slightly different rpm results vary somewhat.

Project testing was primarily completed at one farm and was used on a 700 bushel Horsch air tank. Cart had 3 different compartments for seed and fertilizer.

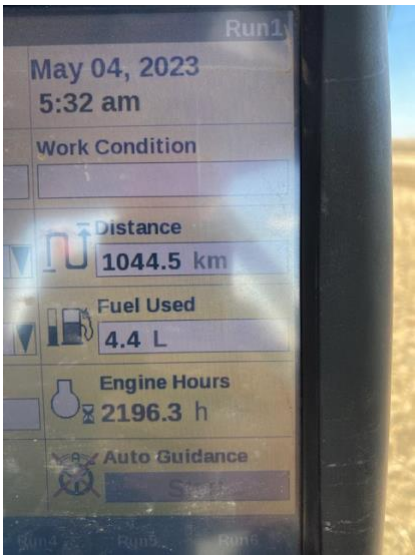
Project Test results using this set up:

Test #1	Approx. 700 bu	8:17 minutes	2.27L consumed by Cart tractor
			0.34L by idling drill tractor
		Total	2.61L
Test #2	Approx. 700 bu	7:15 minutes	1.57L consumed by Cart tractor
			0.29L by idling drill tractor
		Total	1.86L
Test #3	Approx. 700 bu	5:31 minutes	1.51L consumed by Cart tractor
			0.21L by idling drill tractor
		Total	1.72L
Test #4	Approx. 700 bu	7:15 minutes	1.89L consumed by Cart tractor
			0.30L by idling drill tractor
		Total	2.19L

This customer did get close to 100 fills using the Opti-Cart. His test results became very similar fill after fill. This would be the most efficient user of the seed tender as he has had the most usage.

One test was completed on a 950-bushel Bourgault air tank. It loaded 4 tanks of seed and fertilizer.

Test # 5	Approx. 950 bu	15minutes	4.4L consumed by tractor
			0.61L by idling drill tractor
		Total	5.01L



Conclusion of Baseline and Project test results:

Upon a quick overview of the results of the project there is minimal fuel savings by using an Opti-Cart compared to the traditional fill method of air tanks. In order to more accurately see the exact savings a litres/ bushels loaded will be used. Although this was not how we originally were going to figure fuel savings it became the proper way to compute fuel usage as we could not use the same size tanks for the baseline and the project.

In the initial **baseline** results from 2022 we observed the following:

325 bushels loaded consumed 5.55 litres of fuel
325 bushels loaded consumed 5.57 litres of fuel
275 bushels loaded consumed 3.87 litres of fuel
395 bushels loaded consumed 4.33 litres of fuel
335 bushels loaded consumed 4.79 litres of fuel

These results now average out to **0.0146** litres/bushel loaded.

In the **baseline** results from 2023 we observed the following:

950 bushels loaded consumed 17.72 litres of fuel
950 bushels loaded consumed 13.34 litres of fuel
950 bushels loaded consumed 12.51 litres of fuel
950 bushels loaded consumed 18.1 litres of fuel
950 bushels loaded consumed 15.85 litres of fuel
950 bushels loaded consumed 20.95 litres of fuel

These results now average out to **0.0172** litres/bushel loaded.
Baseline results year over year were still very similar.

In the **project** results from 2022 we observed the following:

375 bushels loaded consumed 4.7 litres of fuel
375 bushels loaded consumed 4.3 litres of fuel
375 bushels loaded consumed 4.6 litres of fuel

These results now average out to **0.0121** litres/bushel loaded.

In the **project** results from 2023 we observed the following:

700 bushels loaded consumed 2.61L of fuel
700 bushels loaded consumed 1.86L of fuel
700 bushels loaded consumed 1.72L of fuel
700 bushels loaded consumed 2.19L of fuel
950 bushels loaded consumed 5.01L of fuel

These results now average out to **0.00412** litres/bushel loaded.

Just as we thought last year. As a user becomes better skilled at using the Opti-Cart an even lower fill time per fill could be achieved. So partially because of this and the added feature of auto-unload our fuel consumption was lower during the project testing than in 2022.

As such the project results saw a difference of **.00798** less litres/bushel loaded year over year.

BASELINE FUEL USAGE 2023= 0.0172 litres/bushel loaded

PROJECT FUEL USAGE 2023= 0.00412 litres/bushel loaded.

Difference= 0.0131 litres/bushel loaded

There is a difference of 0.0131 litres/bushel loaded. Meaning that when filling a 700-bushel air tank with and Opti-Cart the user would see an approximate **savings of 9.17 litres** of fuel consumed per fill.

The GHG reduction was calculated using the emission factors published in the Carbon Offset Emission Factors Handbook Version 2.0.
https://open.alberta.ca/dataset/2a41f622-5ae4-4985-838f-497e6afd110c/resource/0ba7b3dc-0658-43dc-b977-4c9c35637f49/download/aep-carbon-offset-emissions-factors-handbook-v-2-2019-11.pdf
by the Government of Alberta.

Savings Line Item Per Litre	***kg CO2 /L***	***kg CH4/L***	***kg N2O /L***
Emmissions Intensity of Extraction & Production	0.4117	0.0109	0.000004
Combustion Related Emmissions	2.803	0.000133	0.0004
Total Savings Per Litre (KG)	3.2147	0.011033	0.000404
Total Savings Per Litre (Tonne)	0.0032147	0.000011033	0.000000404
Global Warming Potential (GWP Factors)	1.000	32.000	281.5000
CO2E Per Line Item (Tonnes Per Litre)	0.0032147	0.000353056	0.000113726
Total T CO2E Savings Per Litre (Tonne/Litre)	0.003681482		

9.17L X 0.003681482 = 0.03375918994 tCO2e savings/ 700-bushel fill.

Based on these results, if a customer seeded approximately 10,000 acres and used the Opti-Cart to fill a 700-bushel air tank close to 100 times then the amount of fuel saved would be 917 litres.

3.38 tCO2e per 10,000 acres seeded.

As only one unit ran full time during the project a total of 917 litres of fuel were saved and 3.38 tCO2e.

In the attached Appendix, we have entered similar results to which we have found in the testing above. As every farm and user is different these numbers will fluctuate, and different results will occur. These will be very similar numbers on average. We had anticipated a higher fuel savings per fill on average. After testing

it appears, we are approximately 500 litres short of expected diesel fuel savings per year. We had anticipated around 1,447 litres of savings but we are seeing around 900 to 1,000 litres instead. Results will vary depending on skill level, and planning abilities of users.

10.2 Reviewed GHG Reductions:

Post project internal GHG reviewers analyzed and validated project level GHG emission reductions in Alberta (2022-2023) as 3.17 tCO_2e. Reviewer estimates that total GHG emission reductions in Alberta resulting from the project will reach 70.4 tCO_2e by 2030 and 260.7 tCO_2e by 2050. Reviewed assumptions:

The average area seeded by each unit is 11,173.3 acres.
One Opti-Cart has been consistently used in the 2022 and 2023 seeding seasons.
Three Opti-Carts will operate in Alberta in the years 2024 to 2050.

Reviewers applied the measured fuel consumption per bushel loaded data from the field tests. As well as, utilized emissions factors for upstream diesel extraction and production from the Alberta Carbon Offset Emission Factors Handbook, Version 2, November 2019, applicable during project planning and execution. And applied global warming potential values of 25 for CH_4 and 298 for N_2O, as per GHG reporting practices in Alberta for 2020-2022.

10.3 Other Environmental impacts

11.0 Economic and Social Impacts

As the Opti-Cart has not reached a complete commercialization yet, the economic and social impacts are minimal. However, farmers and other manufacturers have recognized what we are trying to do and there is a lot of interest in using a large seed tender like this one to increase efficiency during spring seeding.

12.0 Overall Conclusions

The Opti-Cart works! It is a viable option for farmers to increase their efficiencies during the spring seeding process. If market adoption takes place and farmers learn to use this product, we may see some higher fuel efficiencies and savings, however they will not be significant in the reduction of GHG emissions.

13.0 Next Steps

Optimal Agricultural Equipment Ltd. will continue to try and market these units that we have built. If demand increases, it is our intention to find a way to lower costs of manufacturing to make this a viable business.

14.0 Communications plan

It is the intention of Optimal Agricultural Equipment Ltd. to continue to promote the concept to the end users (farmers) primarily through direct contact with our salespeople. We will also be communicating with other manufacturers in Canada to solve our production cost issues.