# Low-Cost Rollover Protective Structures (ROPS) Implementation Project

# Newfoundland and Labrador

**Final Project Report**

**Prepared for:**
**WorkplaceNL**

**Delivered in partnership with:**
Canadian Centre for Rural and Agricultural Health (CCRAH)
Memorial University of Newfoundland (MUN)
Newfoundland and Labrador Federation of Agriculture (NLFA)

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## Executive Summary

Agriculture continues to be one of the highest-risk industries in Canada, with tractor rollovers remaining a leading cause of fatal and serious workplace injuries. Research consistently shows that rollover protective structures (ROPS), when used with seatbelts, are highly effective in preventing death and serious injury during tractor rollover events. Despite this evidence, a significant number of older tractors in Canada continue to operate without ROPS due to cost, limited availability of commercial systems for legacy equipment, and the low market value of older tractors.

The Low-Cost ROPS Implementation Project was undertaken to address this persistent occupational health and safety risk. Primarily funded by WorkplaceNL, and delivered in partnership with the Canadian Centre for Rural and Agricultural Health (CCRAH), Memorial University of Newfoundland (MUN), and the Newfoundland and Labrador Federation of Agriculture (NLFA), the project evaluated whether engineered, low-cost ROPS could be safely fabricated by farmers using specialized designs supported by professional engineering oversight.

This project formed part of a broader national initiative aimed at reducing tractor rollover fatalities by making CSA-compliant ROPS more accessible and affordable for older tractors. The Newfoundland and Labrador project served as the first large-scale field implementation to test the designs, fabrication instructions, farmer fabrication skills, engineering support processes, and promotional approach under real farm conditions.

This project's specific objectives were to:

1. Engage key provincial stakeholders to ensure the program aligned with provincial agricultural practices;
2. Assess the prevalence of older tractors without ROPS and farmer willingness to participate;
3. Coordinate the fabrication and CSA testing of low-cost ROPS built by farmers; and
4. Support extension and safety partners in promoting the program to the farming community.

A multidisciplinary team with extensive experience in agricultural safety, engineering design, and knowledge translation led the work. Three parametric ROPS designs were developed to cover older tractors based on tractor weight ranges, rather than based on individual tractor makes and models. This approach significantly increased the potential coverage of older tractors while maintaining compliance with the CSA M5700 ROPS Static Test Standard. The designs incorporated features intended to reduce weld stress, improve energy absorption during rollover events, and support consistent quality by the fabricators.

Strong collaboration was established between WorkplaceNL, NLFA, MUN, CCRAH, and provincial government representatives. Regular meetings, farm visits, and outreach

activities were conducted to understand farmer needs, assess equipment suitability, and support recruitment. Engagement confirmed that many older tractors in Newfoundland and Labrador remain without ROPS and that farmers generally demonstrated the skills, interest, and capacity to fabricate ROPS themselves, or using trusted friends or local fabricators. Timing was identified as an important factor, with winter months preferred for fabrication due to reduced farming workload.

Eight ROPS were fabricated during the project, meeting the project's minimum target. Seven units were subjected to CSA M5700 static testing, and one was installed directly on a tractor. Most ROPS passed testing successfully. Units that failed did so due to clearly inadequate weld quality rather than design deficiencies. These failures validated the importance of the project's proposed remote verification and inspection process, which is intended to identify and correct fabrication issues before final approval. Testing results confirmed the overall robustness of the designs and demonstrated that minor weld remediation could effectively address deficiencies.

Material costs for the fabricated ROPS ranged from approximately $457 for smaller units to just over $1,000 for larger designs. These costs were substantially lower than commercially available ROPS and were considered reasonable and affordable by participating farmers. Fabrication time generally ranged from 8 to 12 hours. Farmers reported that the process was manageable and that engineering support was accessible and effective.

An independent survey conducted by MUN and NLFA confirmed a positive participant experience. All respondents agreed that the program improved safety awareness, met cost expectations, and would be beneficial to other farmers. Participants identified affordability, improved safety, and adaptability of the designs as key strengths, while also providing practical suggestions to improve fabrication instructions and clarity.

Overall, the Newfoundland and Labrador Low-Cost ROPS project demonstrated that farmer-built, engineered, CSA-compliant ROPS are a feasible and effective injury prevention strategy for older tractors. The project confirmed strong stakeholder support, demonstrated measurable progress toward reducing rollover risk, and validated a scalable model suitable for broader implementation. The results support additional research in NL to fine tune the program. The results also supported further expansion of this approach as part of a coordinated national effort to reduce serious injuries and fatalities associated with tractor rollovers and to strengthen occupational health and safety outcomes in Canadian Agriculture.

## Acknowledgements

This project was made possible through the leadership, support, and collaboration of organizations committed to improving occupational health and safety in agriculture.

Primary funding was provided by **WorkplaceNL**, whose commitment to agricultural safety was central to the successful development and completion of this work.

Significant support and collaboration were also provided by **Memorial University of Newfoundland** and the **Newfoundland and Labrador Federation of Agriculture**, whose expertise and engagement strengthened the project's research and practical impact.

The valuable contributions of the other supporting organizations, whose collective efforts reflect a shared commitment to advancing agricultural safety and injury prevention across Canada, is also acknowledged.

Contributing and Supporting Organizations

## Introduction

In Canada, a leading cause of farm work-related deaths is tractor roll events, which account for 17% of all farm work-related deaths (CAIR, 2016). Canadian Agricultural Injury Reporting (CAIR) data on Agricultural Rollovers in Canada, for the period from 1990-2001, indicated 270 farmers died, and 339 farmers were hospitalized with serious injuries from tractor rollovers on Canadian farms. In 2004, agriculture-related injuries in Canada cost $465M (SmartRisk, 2010). This includes costs arising from the use of health care and costs related to reduced productivity from hospitalization, disability, and premature death. A study of farm safety conducted in Saskatchewan observed that 64 - 69 % of farms reported the absence of ROPS on one or more tractors (Hagel, 2013). There is no reason to believe that a similar situation does not exist in other provinces. Evidence from Sweden, Norway, Finland, and West Germany demonstrated that mandatory ROPS and seat belt retrofitting on all tractors virtually eliminated fatal tractor rollover deaths (Springfeldt, 1996). In spite of overwhelming evidence to the efficacy of ROPS in the prevention of death or serious injury in a tractor rollover event, North American farmers continue to cite the cost of retrofitting older tractors with ROPS as one of the main deterrents to installing this safety feature on their tractors (Sorenson et al., 2006). An effort to devise easily available and affordable ROPS retrofits is clearly warranted.

This project was intended to fill an existing commercial gap that has unfortunately resulted in approximately one-third of all tractors in Canada still being operated without rollover protective structures (ROPS). The cost of commercial ROPS ($750 to $2,500) discourages farmers from buying ROPS for older tractors (as these older tractors may have a value of only about $2,000). Previous studies by the USA National Institute for Occupational Safety and Health (NIOSH) and the New York Center for Agriculture Medicine and Health (NYCAMH), as well as the Prairie Agricultural Machinery Institute (PAMI) and other researchers indicated that many commercial ROPS exceed farmer's purchase price point and that the costs associated with a commercial ROPS manufacturing and retail process such as transportation, markup, and design and fabricator's labour, result in a prohibitive ROPS cost for some older tractors. There are USA programs that are subsidizing the purchase of some ROPS on older tractors, but there is a significant associated cost. The program requires considerable sponsorship funding every year which is a heavy burden for the continuity and effectiveness of the program. Many interested farmers are frustrated waiting in a queue as there is not adequate sponsorship funding available to meet the demands of those programs. Lower-cost ROPS that are built directly in the farm shop could significantly decrease the costs and increase the uptake and usage of ROPS by farmers. An intervention model where engineered ROPS fabrication design drawings would be provided to farmers for local fabrication is a very promising option as it appears to reduce the ROPS to a very acceptable costs of about $500.

With the combination of that significant farm safety need and funding support of Agrivita (an organization within the University of Saskatchewan), a Low-Cost ROPS project was initiated by the Canadian Centre for Rural and Agricultural Health. It has been progressing nicely. A design was developed that fits several small Massey Ferguson tractor models. Several key questions seemed to be resolved: (1) ROPS can be designed such that high stresses will be away from the welds; (2) farmers are capable of building quality low-cost ROPS on their farm from engineered drawings; (3) a remote inspection process was drafted where engineering resources would be available to ensure that the farmer met the Standards requirements; and (4) a process was also drafted on installing seat belts. While the achievements to date have been very encouraging, there is more work to be done.

Initial research had indicated that only 3 or 4 ROPS designs would be required as it appeared a few very common tractor models may cover the majority of older tractors. However, data later acquired from the USA New York Center for Agricultural Medicine and Health (NYCAMH) ROPS program indicated that many more designs would be needed to cover the majority of older tractors. Four ROPS designs would only cover 21% of older tractors, while ten ROPS designs would only cover 31% of older tractors. While this is USA data, tractor trends in Canada have historically been similar enough to allow an assumption of similar data in Canada. This limitation of most farmers (as much as 79%) being told that their tractor is not covered by the program would be very frustrating for many farmers and damage the reach and credibility of the program. However, an exciting discovery was made by March Engineering Consulting of Saskatoon. Using a parametric design approach based on three tractor weight groupings (for example, tractor weights in the range of 1000 – 2000 lb, 2001- 4000 lb, and 4001 – 6000 lb vs a specific ROPS for each individual tractor make and model) would greatly expand the program coverage and credibility.

Pivoting the existing project to parametric designs that cover all groups of tractors would provide Canadian farmers with a comprehensive program to effectively address the gap in ROPS on Canadian farm tractors and pave the way to a National Program. Three parametric ROPS designs had reached an initial development stage but like all new products, they require field testing to ensure that they are fully meeting the needs of the end user. Fortunately, WorkplaceNL saw the value in supporting this project to determine its suitability and potential modifications to best suit the needs of Newfoundland and Labrador farmers.

The positive impact of the reduction of fatalities and serious injuries on occupational workplace health and safety would be very significant! It would be a made-in-Canada applied research example that could attract International attention.

## Methodology

The overall purpose of the project is to equip Canadian farmers with the capability to economically build and install ROPS with seatbelts on all older tractors in Canada that do not have that safety feature. It would thereby eliminate a major cause of fatalities on the Canadian farm.

This Newfoundland Labrador project is part of a larger national low-cost ROPS project being conducted by the Canadian Center for Rural and Agricultural Health.

In this Methodology section, the main ROPS project and its status will be presented first and then the objectives and methodology of the Newfoundland and Labrador Low-Cost ROPS project will be presented after that.

### 1. Main CCRAH Low-Cost ROPS Project

1.1 SUMMARY OBJECTIVES:

- Design and test three parametric ROPS
- Conduct Knowledge Translation (KT) and Social Marketing Activities to educate farmers on the opportunity of Low-Cost ROPS
- Facilitate farmers building 50 ROPS in at least 5 provinces over the duration of the project
- Provide supporting engineering resources to assist farmers to comply with the ROPS Standard.
- Initiate the Ag ROPS Canada Program and Website

1.2 DETAILED ACTIVITIES

1.2.1 Project Team

- A highly qualified team has been assembled to conduct the project. The team consists of experienced researchers, design and safety engineers, and KT and social marketing specialists from several credible research and engineering organizations.
- Dr Koehncke and Wassermann act respectively as principal investigator and project manager.
- Dr Koehncke of CCRAH and Dr Cullen of Memorial University provide the research oversight to the project.
- Sheldon Grywacheski, P. Eng of Grywacheski Engineering Consulting leads the technical engineering aspects of the project. Justin Grywacheski, P. Eng. and other engineers and technicians will support Grywacheski in the design, testing, and engineering resource for the parametric ROPS designs. The 3 engineers on

the project have over 80 years of experience in machinery design, development and testing.
- CCRAH staff provide the KT and Social Marketing Specialists.
- Expert meetings occur regularly to guide the program.

1.2.2 Design and test three parametric ROPS

- Designs for three tractor weight groups were developed; currently estimated to be (1) up to 3500 lb, (2) 3501 to 7500 lb, and (3) 7501 to 10,000 lb.
- The designs comply with Canadian ROPS Test Standard CSA M5700.
- The designs utilize the principles of ensuring weld locations are away from higher stress locations at the base and have increased weld area to achieve an extra F of S (factor of safety). Additionally, gussets in the upper corners create triangular strength to minimize bending stresses on welds at the mounts.
- Advanced Finite Element Analysis software is used that allows the designs to be modeled beyond elastic deformation into the plastic deformation range. This principal allows energy to be absorbed in a roll over, thus decreasing stresses at the mounts, at the welds and other critical locations.
- Simple drawings and fabrication instructions are being developed for all designs including the procedure to obtain and install a seat belt.

1.2.3 Coordinate the fabrication of 50 ROPS by farmers in at least 5 provinces over the duration of the project

- Design and build a dedicated ROPS Test Fixture to reduce the costs of testing many multiple ROPS to a cost that is affordable to the project
- Educate the cooperating provincial farm safety personnel in each province about the program and the social marketing benefits of this ROPS Program
- With the help of the provincial farm safety personnel, promote the program widely to farmers in their province and recruit farmers to participate in the program
- Provide instructions and drawings to the farmers as well as access to an engineer ‘hot-line’ resource to answer questions that occur during the on-farm fabrication process

1.2.4 Provide engineering resources to assist the farmers to meet the applicable Standards.

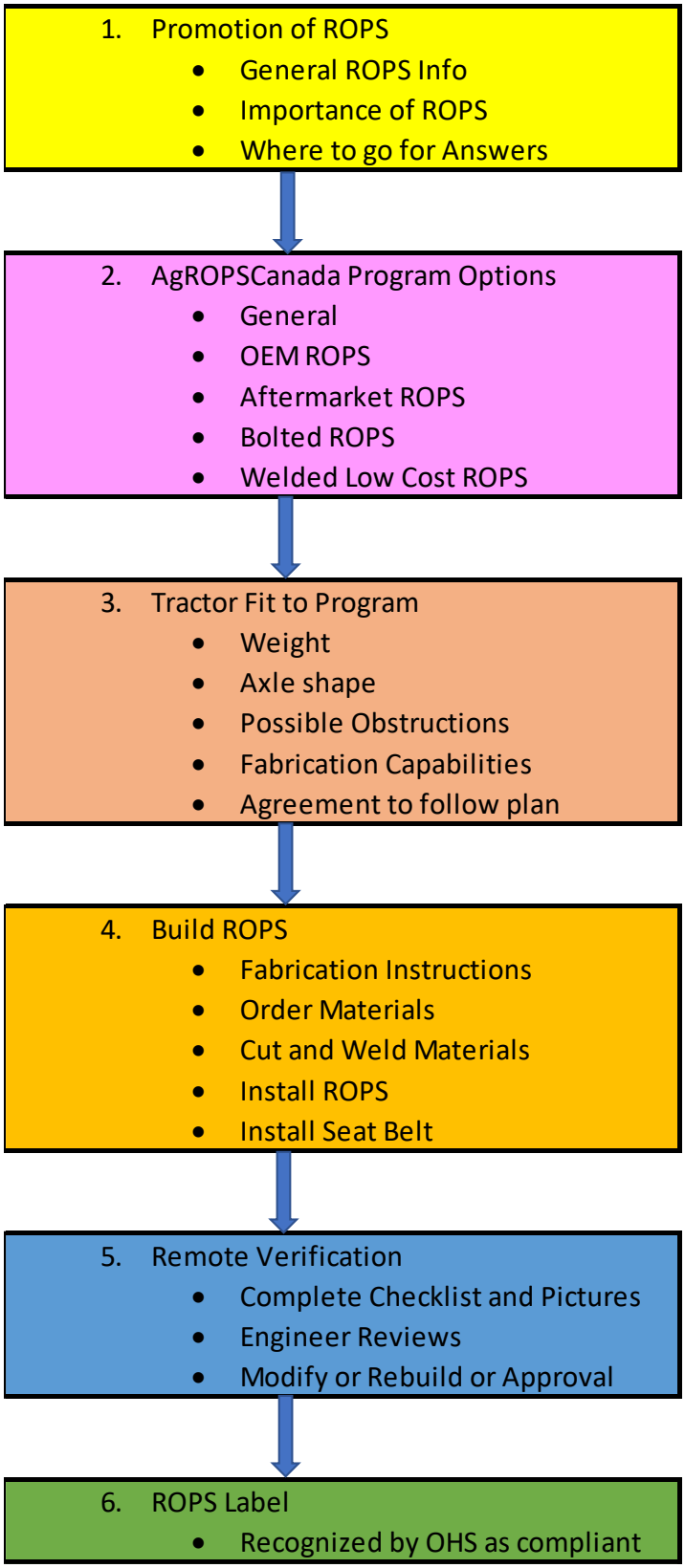
- Finalize a step-by-step guideline including a checklist for farmers to follow to meet requirements

- After farmers have completed their installations, do some on-site visits to confirm that all instructions are understandable and practical
- Include guidance on any provincial regulatory and legal questions.
- Determine if a special insurance program/premium is required.

1.2.5 Establish the National Ag ROPS Canada Program

- Webpage design – develop the AgROPSCanada website, test it with participating farmers and have other websites link to it
- Establish an engineer hot line to respond to famer inquiries and to coordinate the certifications and labels
- Design the systems needed for the Program to sustain itself
- Establish a clear process for farmers to follow based on the following:

# AgROPSCanada Program Process



## 2. Newfoundland and Labrador Low-Cost ROPS Project

This project is the first significant "field test" of the ROPS Designs, Fabrication Instructions and the Promotional Material that has been developed by the main project. The planned objectives were broken into the following 4 deliverables.

2.1 Meet regularly with all stakeholders to optimize project activities

The ability to understand the specific needs of the Newfoundland and Labrador farmer is paramount to the success of this project. Although most Saskatchewan personnel have agricultural roots, there is significant differences between the agriculture of the two provinces. Hence the need to understand and build strong relations with the farmers and their 'circles' was very important. With Dr Cullen as the first connection point, the team targeted to also build connections with WorkplaceNL, the Newfoundland and Labrador Federation of Agriculture, the Occupational Health and Safety Division of the Department of Government Services and the Department of Forestry, Agriculture and Lands.

2.2 Assess older NL tractors without ROPS and determine farmer openness to build their own ROPS

Once relations were built with the various stakeholders, meetings were planned to visit farmers events and farms to view the tractors being used and the farmers openness to participating in the project. Several farmer meetings were attended and project personnel then began gathering data on the tractors and recruiting volunteers to participate. Note that farmer's names are not included in this report to respect University protocol of the confidentiality of volunteers.

2.3 Coordinate the build and certification of 8 - 20 ROPS in NL

This was the primary activity of this project. Once farmers were recruited, the research team needed to determine if the tractor would accommodate one of the three ROPS designs. The axle geometry was very important to ensure it would properly fit the ROPS mount system. ROPS would be tested to CSA M5700 ROPS Static Test Standard to determine quality of the fabrication and verify compliance with the design. The Test Standard has 4 components. Load are applied in sequence: rear push, downward crush, side push and 2$^{nd}$ downward crush (Figure 1 and 2). The calculated requirements are dependent on the mass of the tractor (Figure 3). Additionally, the standard operator zone cannot be encroached by the simulated ground plane or the ROPS.

Figure1. Rear Load Application

Figure 2. Downward Crushing Force Application

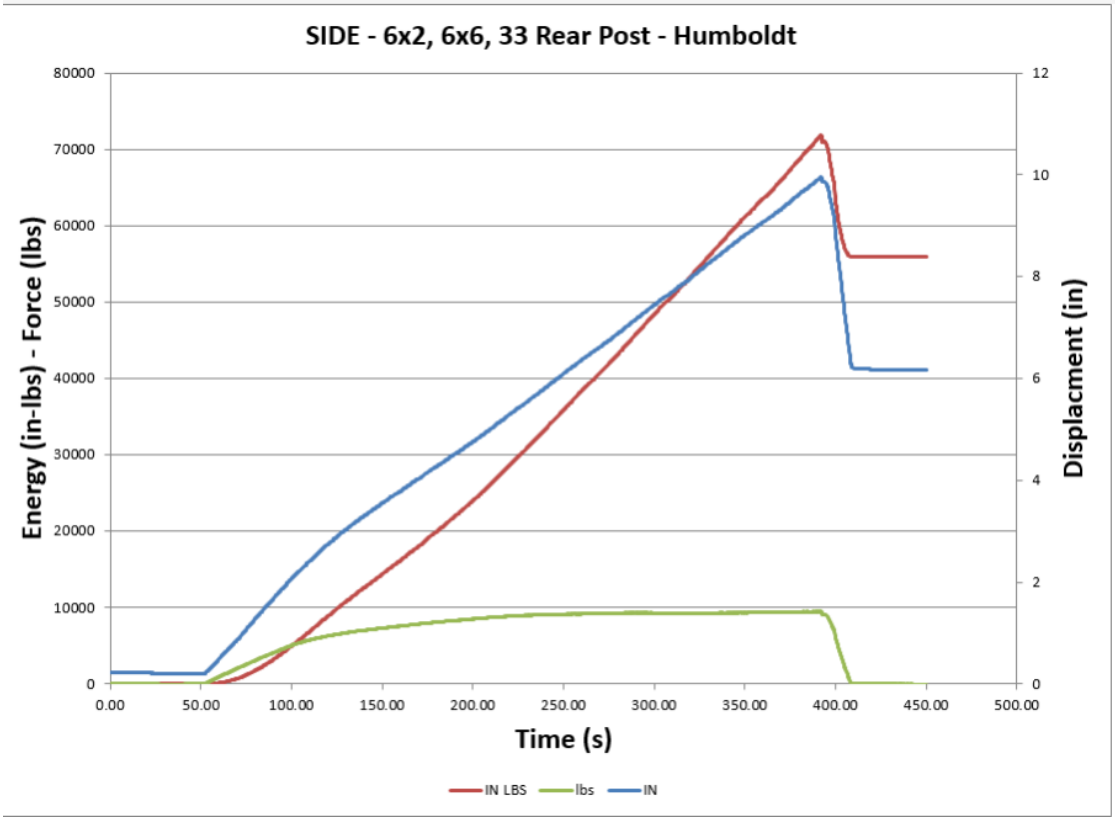



Figure 3. Typical Graphs from a CSA ROPS Test

Participating farmers were given Fabrication Instructions similar to those illustrated in Appendix 1. In addition to the testing, the time to build and cost of materials would be recorded, and the difficulty of the fabrication would be assessed.

2.4 Assist NL extension personnel to market the program

Wassermann and CCRAH staff would be available to assist NL farm safety personnel, if needed. Wassermann had several visits to farm events planned and gave NL safety personnel feedback on all material that was developed.

## Results and Discussion

### Activity 1: Meet regularly with all stakeholders to optimize project activities

Excellent communication occurred between CCRAH staff and NL stakeholders. NL Stakeholders included WorkplaceNL personnel, Newfoundland Labrador Federation of Agriculture (NLFA) General Manager, Board Members and their AgriCare Coordinator, Kylie Stokes, M.A.C.P., the Department of Forestry, Agriculture and Lands Manager of Research, and 4 other staff who were part of a farmer meeting.

Regular video meetings were held, complemented by 4 in-person visits to Newfoundland and Labrador by the project's lead engineer, Wassermann.

Dr Koehncke and Wassermann first traveled to NL in December 2023. Meetings were held with Dr Cullen at MUN, representative of the Department of Forestry, Agriculture, and Lands, and representatives of the OHS Division of the Department of Government Services. Then Wassermann travelled to Corner Brook to meet with the NLFA representatives. The project plans were shared, feedback was received and all parties were supportive of the project proceeding.

Wassermann again traveled to NL to attend the NL Fruits and Vegetable Growers annual conference in Gander on March 5 and 6th, 2024 which had an attendance of about 60. He presented a PPT presentation which was well received and it was posted on the Fruits and Vegetable Grower's website. He also operated a booth with a display through the entire conference and distributed 2 different brochures on the project to interested attendees. He held discussions with the NL Department of Agriculture representatives and other stakeholders at the conference.

In July 2025, Wassermann travelled to Goose Bay to attend a farmer meeting and to also visit 2 farms with prospective ROPS builds. In October 2025, he traveled to St John's to meet with WorkplaceNL and to Corner Brook to meet with NLFA. He also visited farmers in Lethbridge, Cormack and Corner Brook.

Ms. Stokes was an extremely important and active contributor to the project and is aggressively promoting this ROPS initiative in NL. Ms. Stokes provided direct connections between the farmers from across the province to the CCRAH personnel. During the project she obtained funds to partially support the farmer's fabrication costs and some of Wassermann's travel costs, which was a tangible confirmation of NLFA's farmer members support of this ROPS Initiative. She is committed to supporting this initiative into the future. NLFA General Manager met with Wassermann several times to also confirm the organization's leadership support of this project.

A conference call followed by an in-person visit with Dr. Kim Cullen, Ms. Stokes, and the project team, occurred in October 2025 to finalize a plan for a Memorial University

(MUN) Research Associate, Jacob Sargent, to independently survey participating farmers following ROPS fabrications. This assessment (Appendix 2) would evaluate farmer experiences, perceptions of the program, and support future research outputs.

### Activity 2. Assess older NL tractors without ROPS and determine farmer openness to build their own ROPS

Background research was conducted in collaboration with NLFA to better understand farmer perceptions, acceptance, and historical use of ROPS in Newfoundland and Labrador. Ms. Stokes continued to lead outreach and engagement activities to assess farmer interest and readiness.

In July 2025, Wassermann visited Goose Bay farms with Ms. Stokes and representatives from the NL Department of Forestry, Agriculture and Lands. This was useful to do on site visits and have candid discussions with Labrador farmers. The tractors on those farms were suitable for this ROPS program and the farmers demonstrated suitable capability to build the ROPS themselves or if not, to use a 'friend' with suitable welding/fabrication capability.

In October 2025, Wassermann visited 3 farmers in Cormack, Lethbridge and Corner Brook. Feedback was positive from those farmers and they confirmed their commitment to go ahead with ROPS builds. Three other farm visits were planned but were cancelled due to ever changing farmers schedules.

The visits also confirmed that program promotion is most effective outside peak farming seasons, with July and winter identified as appropriate times for engagement.

Throughout the project Ms. Stokes had several communication activities to recruit farmers. A group of farmers was recruited from various locations as shown in Table 1. Note that names remained confidential as per University guidelines for project volunteers.

However, as the project deadline approached, about half of the participants surprisingly withdrew. It will be useful to better understand the reason, but there was no time available before the end of the project and researchers needed to be cautious with their communications as volunteers to University projects can withdraw at any time without giving a reason.

Table 1. Recruited Farmer Locations and Follow Through

| **Farmer Location** | **Final Action on ROPS Fabrication** |
|---|---|
| Goose Bay | Withdrew |
| Goose Bay | Withdrew |
| Pasadena | Built 1 for testing |
| Corner Brook | Built 3 for testing |
| Lethbridge | Built 1 for testing and 1 for tractor installation |
| Cormack | Built 2 for testing |
| Robert's Arm | Withdrew |
| St Albans | Withdrew |
| Codroy Valley | Withdrew |
| **Final Result** | **7 Built for Testing and 1 Installed on a Tractor** |

In the discussion with Dr Cullen, she confirmed that her Research Associate would conduct surveys of all participating farmers to determine their assessment of the Low-Cost ROPS Program and its usefulness as a tool to improve the safety of their farm. Assessment activities were led in close collaboration with NLFA and the results are presented in Activity 4 section.

## Activity 3. Coordinate the build and certification of 8 - 20 ROPS in NL

Three ROPS designs were available for tractors up to 3500 lb (2X2), up to 7500 lb (2X4) and up to 10,000 lb (2X6) (Figure 4).

Figure 4. ROPS Designs (left to right): 2 x 2, 2 X 6, 2 X 4.

In the end, 8 ROPS were built by NL farmers which met the project minimum requirement, although more farmers had initially volunteered and more ROPS were expected. Nevertheless, there was a good sample that provided useful results.

Table 2. ROPS Test Results

| ROPS ID | ROPS Size | Notes | Results |
|---|---|---|---|
| NL-1 | 2 X 2 | ROPS sent for test with mount plates unattached so project staff welded them | Passed Test |
| NL-2 | 2 X 2 | ROPS sent with posts 16 deg back slope instead of proper 12 deg | Passed Test |
| NL-3 | 2 X 4 | Received with very light weld on mounts and some welds were cracked on receipt of ROPS | Failed Test as welds were cracked before testing |
| NL-4 | 2 X 2 | Received with very light welds on mounts that were cracked, project staff repaired | Passed Test |
| NL-5 | 2 X 6 | Received with very light welds on mount plates and some welds were cracked on receipt of ROPS | Failed Test as welds were cracked before testing |
| NL-6 | 2 X 2 | Received with light welds on mount plates that were cracked so repaired | Passed test |
| NL-7 | 2 X 2 | Required modified mounts to fit tractor | Installed on Tractor |
| NL-8 | 2 X 2 | Required modified mounts to fit tractor but still in shipping yet and has not yet arrived for testing | Will be tested on arrival |

While 2 failed ROPS may indicate concern, it actually reinforced the strength of the proposed process. The ROPS that failed had very light welds and these would not have passed the remote inspection that is part of our process. If a remote inspection would have been conducted, and pictures of these welds were received, the farmer would have been required to reweld the mount plates to suitable quality before a ROPS label would be issued.

It was promising that only the very obvious light welds failed. All of the ROPS, that were repaired by CCRAH, were done with intentionally average welds but they still passed the CSA ROPS test. This demonstrated the robustness of process starting with designs that do not require high quality welds and the remote inspection process to ensure the welds and overall fabrication met the required quality standard.

Further, the survey indicated that better instructions were recommended. That is easily remedied as the revised Fabrication Instructions will have pictures inserted so farmers have a clearer picture of acceptable welds. There is also consideration of shooting a video that would give guidance to the fabricators.

Also, of value was the results of parallel work that occurred in Saskatchewan where 6 ROPS had been built and all of those passed the CSA ROPS test.

The cost of ROPS was naturally of considerable interest. All 2025 ROPS materials costs are shown in Table 4.

Table 4. Material Costs of Farm Built ROPS

| **ROPS SIZE** | **Tractor Weight** | **MATERIAL COST** |
|---|---|---|
| 2 X 2 | Up to 3500 lb | $457 - 623 |
| 2 X 4 | 3501 to 7500 lb | $916 |
| 2 X 6 | 7501 to 10,000 lb | $1023 |

In general, these costs are still significantly less than commercial ROPS, but more than the initial goal of 25% of commercial ROPS. Costs appear to be closer to 40% of commercial cost which is still a significant saving for farmers who are handy at fabrication. To ensure farmers are able to make the best financial choice for their situation, CCRAH will include commercial Original Equipment Manufacturer (OEM) and after-market ROPS options on its website.

## Activity 4. Assist NL extension personnel to market the program

Excellent relations continued to grow with NL Federation of Agriculture and NL Department of Forestry, Agriculture and Lands throughout the project. It was clear that the provincial extension personnel are very important to connect with the farmers of this province.

The trip to Goose Bay allowed Wassermann and Stokes to meet 4 key Department of Forestry, Agriculture and Lands staff including one who reports directly to the Deputy Minister. This will ensure the details of this program are understood, accepted and promoted by this department alongside the NLFA promotion.

Ms. Stokes has agreed that the ROPS Program will be one of her top long-term priorities and that she will be able to work in a complementary role with WorkplaceNL and MUN. This will ensure this ROPS initiative has an on-going thrust from NL Safety Professionals long after this initiation research project is complete.

Promotional literature and brochures were developed and circulated through NLFA social media channels with promising uptake by the farmers. Appendix 3 provides a few examples. Early uptake and farmer response indicated strong interest and effective reach of the promotional efforts.

The MUN Research Associate will also be a great resource to promote this ROPS initiative through the university extension programs.

In May 2025, there was a poster presentation on the project at the SK WCB Compensation Institute Conference in Saskatoon where about 150 attended. Interest was very high. A poster presentation was also given at the International Society for Agricultural Safety and Health (ISASH) conference in June 2025 in Maine USA with about 135 attending from Canada and USA.

To assess the Low-Cost ROPS project, a survey was conducted by MUN and NLFA personnel, independent of CCRAH engineers and personnel, to document the honest experiences of Newfoundland and Labrador farmers who participated in actual low-cost ROPS fabrications. Five farmers, who performed the ROPS fabrication process, completed the survey. A report was prepared and is included in Appendix 2.

Survey results indicated a highly positive overall experience. All respondents agreed that fabrication costs met expectations, engineering support was adequate, the process positively influenced their attitudes toward safety, and access to ROPS design materials would be beneficial to other farmers. Most participants reported that fabrication was straightforward and could be completed within one to two working days.

Participants rated their overall experience as excellent (60%), good (20%), or average (20%). The majority identified winter months as the preferred time for ROPS fabrication, reflecting seasonal workload considerations and access to indoor workspaces.

Open-ended responses highlighted cost-effectiveness, improved safety, and adaptability of the designs as key benefits. Challenges identified included the labour-intensive nature of fabrication, the need for adequate welding skills, and logistical considerations related to material preparation and transportation for testing. Participants also provided constructive suggestions for improving clarity of fabrication documentation.

Overall, the survey findings confirm that the low-cost ROPS initiative was well received by participating farmers, enhanced safety awareness, and demonstrated the feasibility and value of farmer-built, engineered ROPS as a practical strategy for reducing tractor rollover risk.

## Summary and Conclusions

- The project answered several important questions that will ensure the Low-Cost ROPS program will be a good long term fit for NL farmers.
- All ROPS that were submitted for testing passed except for the few that had very light welds. The remote inspection system would identify these and require remediation before approving them.
- The cost of ROPS ranged from $457 for 2 X 2 ROPS to $1023 for 2 X 6 ROPS. Although this is more than the initial goal of 25% of commercial ROPS costs, the farmer participants felt the cost of these ROPS was still reasonable, and affordable and the program is especially valuable for tractors where ROPS are not available.
- The farmers who did build ROPS felt that, although the program could use a few improvements, it was a good program.
- Most farmers indicated that it took them 8 to 12 hours to build the ROPS but the answers ranged from 4 to 20 hours.
- The ROPS design has mounts that were intended to be universal but some tractors were identified that did not accommodate those mounts. An alternative mount design was designed that will likely accommodate those tractor types. It will need to be tested to determine its suitability and strength.
- About half of the farmers, who had initially committed to build ROPS, decided to withdraw. More research is required to understand their reasons considering the positive feedback from those farmers who built ROPS.
- Overall, the results of this study indicate the NL ROPS fabrication project was successful. Participants reported that the ROPS were affordable, generally straightforward to build and were supported by adequate engineering oversight. The project also positively influenced participants attitudes towards safety and demonstrated the potential of Low-Cost, farmer-built ROPS as a strategy for improving farm safety outcomes.

## References


1. Canadian Agricultural Injury Reporting (CAIR). (2016). Agricultural rollovers in Canada, 1990–2001. Canadian Agricultural Safety Association. (Report summarizing Canadian Agricultural Injury Surveillance Program data on tractor and machinery rollover fatalities and serious injuries.)

2. Canadian Standards Association. (2009). *Tractors for agriculture and forestry—Roll-over protective structures (ROPS)—Static test method and acceptance conditions* (CAN/CSA-M5700-09). CSA Group.

3. Earle-Richardson, G. B., Jenkins, P. L., Jones, A. M., May, J. J., & Sorensen, J. A. (2006). Risk perceptions, barriers, and motivators to tractor ROPS retrofitting in the New York State farm community. Journal of Agricultural Safety and Health, 12(3), 215–226. (Study documenting North American farmers' reported barriers—particularly cost—to retrofitting older tractors with ROPS.)

4. Hagel, L., Pahwa, P., Dosman, J. A., & Pickett, W. (2013). Economic worry and the presence of safety hazards on farms. Accident Analysis & Prevention, 53, 156–160. https://doi.org/10.1016/j.aap.2013.01.011. (Study indicating associations between economic conditions and safety features like ROPS on Saskatchewan farms.)

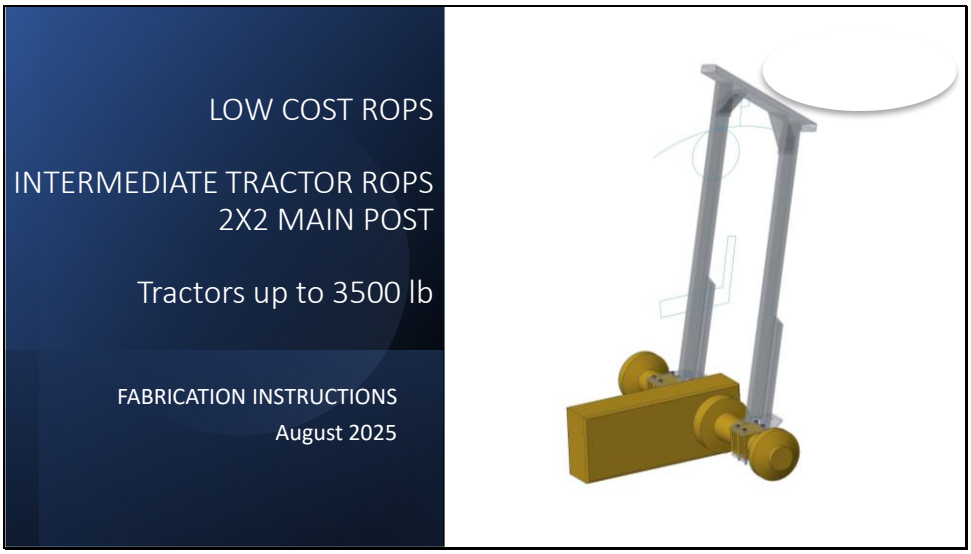
5. SMARTRISK. (2010). The economic burden of injury within the agricultural population in Canada (unpublished report). Toronto, ON: SMARTRISK. (Cited as documenting the estimated $465 million cost of agriculture-related injuries in Canada in 2004.)

6. Springfeldt, B. (1996). Rollover of tractors—International experiences. Safety Science, 24(2), 95–110. (Comprehensive review of international experiences showing that ROPS and retrofitting policies nearly eliminated fatal tractor rollovers in countries like Sweden, Norway, Finland, and West Germany.)

## Appendix 1: Fabrication Instructions for a 2 X 2 Low-Cost ROPS

**IMPORTANT – The following is for Illustration only and not to be used to build a ROPS. To build a ROPS, one must be enrolled in the Ag ROPS Canada Program; email: agropscanada@usask.ca.**

Slide 1

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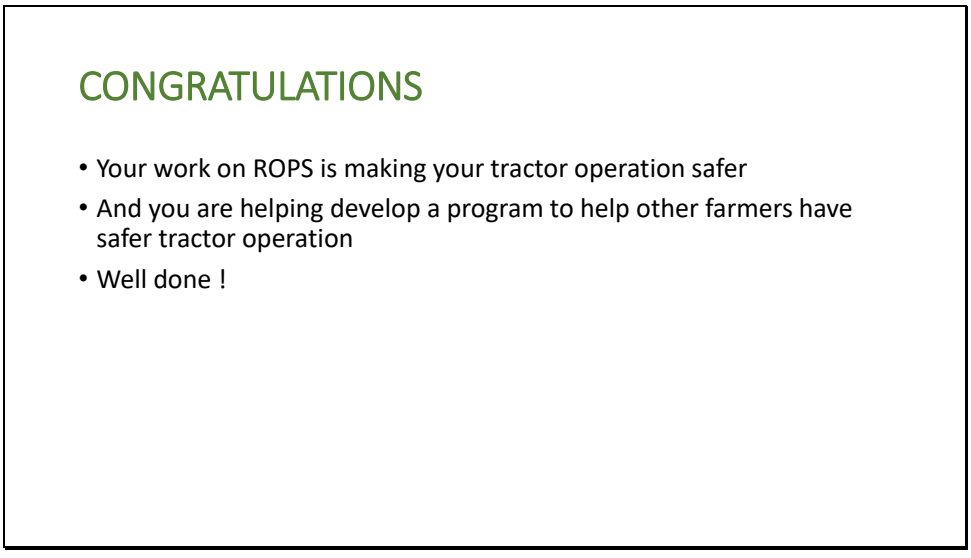
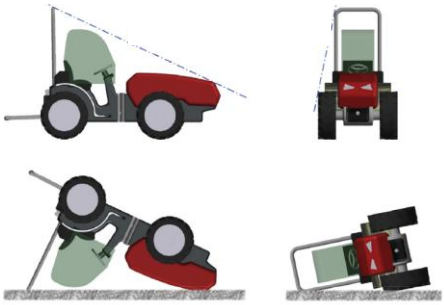


Slide 3

# INTRODUCTION

- Two Post ROPS - For rear, side and top operator protection.
  - Mounted on axle.
  - Post tilted rearward for side vision.
- Designed for farmer with competent fabrication and welding skills or who have access to these skills.
- All Steel material spec to match CSA GS40.21, ASTM 500 or equivalent
- ROPS needs remote inspection by USask on completion of fabrication
- Seat belts are an important required part of the ROPS protection system.



Slide 4

## LOW COST ROPS Agreement Summary:

1. These Instructions and Drawings have been developed to allow the approved user to properly build a ROPS for their tractor that meets Canadian Safety Standards and Provincial Regulatory Guidelines.

2. These Instructions are strictly only available for the approved user (and helper) who agrees to the Terms and Conditions specified by the University of Saskatchewan (USask) Low Cost ROPS Agreement. Instructions and Drawings must not be shared, redistributed or given to anyone else. Anyone who has these Instructions and are not the approved user, must notify the USask contact Jim Wassermann immediately (Jim.Wassermann@usask.ca) to receive remedial instructions.

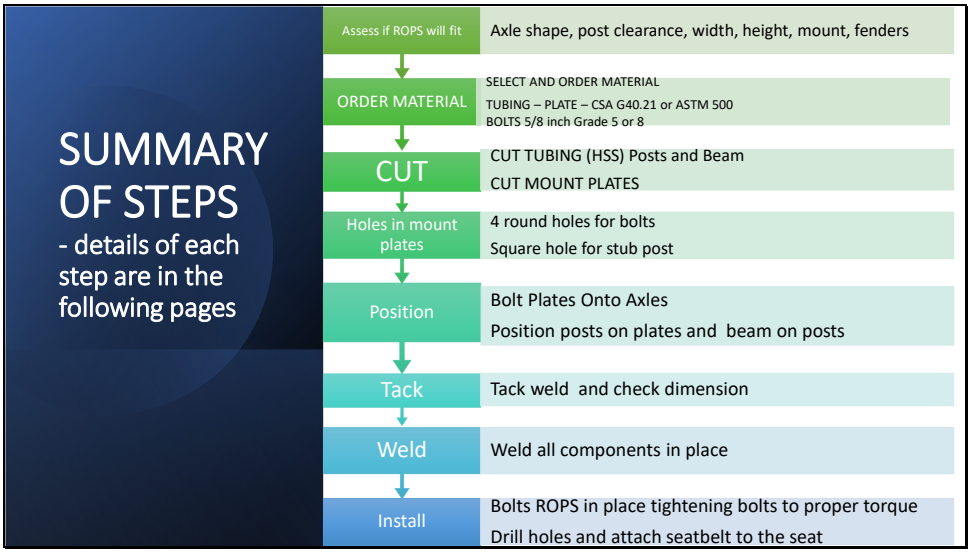
3. The approved user must provide the required follow-up checklist documentation and pictures for engineering review after fabrication is complete to confirm that proper procedures were followed.

4. Provided the Instructions and Agreement were followed properly, USask will provide the approved user with a ROPS LABEL to attach to the ROPS that demonstrates that the fabricated ROPS meets the CSA ROPS Standards.

5. In addition to building and installing the ROPS as specified in these instructions, the approved user must use all other tractor and machinery operation safety precautions including seatbelts when operating the tractor.

6. ROPS are only for use in Canada.

Slide 5




Slide 6

## Will ROPS FIT your Tractor ?

- Mount to axle – Axle should be square or rectangular. The 2 (upper and lower) mount plates need to clamp the axle tightly. Usually there are indents in the axles for the fender mount bolts. Bolts holes in ROPS mounts should be located to fit indents in axle if possible. Fender will usually need to be removed but can then be reconnected to the mounts or square U-clamped to posts. **(Note: Never drill holes in ROPS posts)**
- Width –It should be as wide as possible – ideally, tight against the insides of the fenders. ROPS should be at least 30 inches wide. If it is less, contact USask.
- Height – ROPS must be high enough to protect Operator's head. Therefore, the top of lower seat (butt) cushion must not be more than 36 inches above top of axle to ensure 6 ft posts are over the head. If cushion is higher, contact USask.
- Vertical Clearance for Posts – Obstacles inside the fenders such as tool boxes may need to be relocated to allow posts to fit.

Slide 7

## IMPORTANT TIPS BEFORE YOU START

- You must purchase your steel from a supplier who can provide the specified steel (CSA GS40.21, ASTM 500 or equivalent)
- The length of all steel posts and top beam is important – measure twice and cut once
- The posts must tilt back 11 degrees – this means the top of posts must lean 12-14 inches back from the bottom of the post
- The bottom of the long posts need to be cut at that 11 degree angle so they align with the mounts on the bottom
- The mounting plates bolt hole and square hole locations will need to custom fit to your axle (Instructions are given)
- Mount bolts must be 5/8 inch Grade 5 or 8 and of adequate length

Slide 8

## SELECT& ORDER MATERIAL CUT

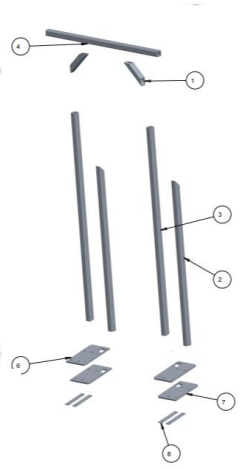


The Low Cost ROPS design set out in these plans is under development. These plans are only intended to be used by farmers, who are part of this research program, and are only to be used as instructed by the research project personnel. Use by anyone else is strictly prohibited.



| ITEM# | PART NUMBER | QTY | NOTES |
|---|---|---|---|
| 1 | 2X2_45_UPPER_GUSSET | 2 | 2X2X0.25 HSS - 10 INCH |
| 2 | 2X2_REAR_POST | 2 | 2X2X0.25 HSS - 56 INCH |
| 3 | 2X2_MAIN_POST | 2 | 2X2X0.25 HSS – 70.5 INCH |
| 4 | 2X2_TOP_BEAM | 1 | 2X2X0.25_HSS - 48 INCH |
| 6 | TOP_PLATES | 2 | 0.5 in X 8 in X TBD PLATE |
| 7 | BOTTOM_PLATES | 2 | 0.5 in X 8 in X TBD PLATE |
| 8 | SPACERS | 4 | 0.25X1.5X TBD PLATE |

MATERIAL CSA GS40.21 44W OR ASTM 500



LOW COST ROPS

2X2 MAIN POST 2X2 SUPPORT

Slide 9

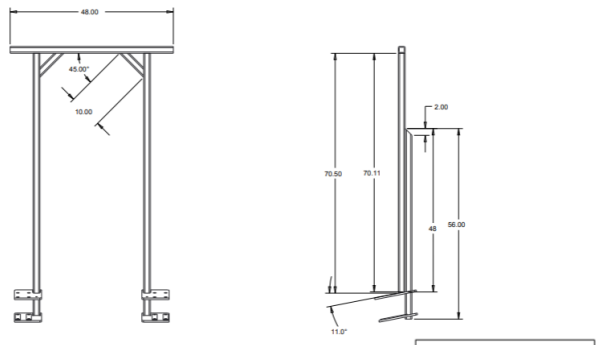
# SELECT ORDER MATERIAL CUT

The Low Cost ROPS set out in these plans is under development. These plans are only intended to be used by farmers, who are part of this research program, and are only to be used as instructed by the research project personnel. Use by anyone else is strictly prohibited.

The Low Cost ROPS set out in these plans is not intended for use with and should not be mounted on any tractor with a weight exceeding 7,500 pounds








LOW COST ROPS

2X2 MAIN POST 2X2 SUPPORT

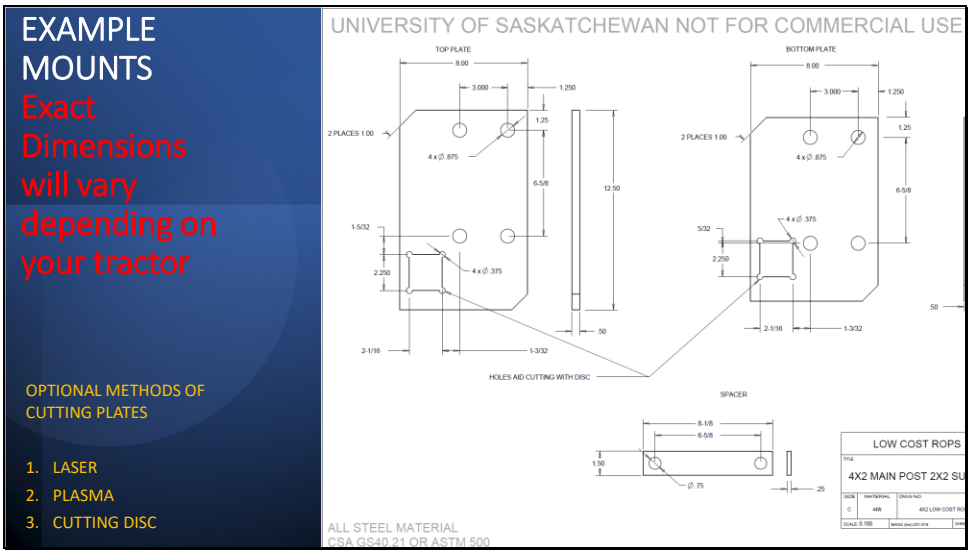
ALL STEEL MATERIAL
CSA GS40.21 OR ASTM 500

Slide 10

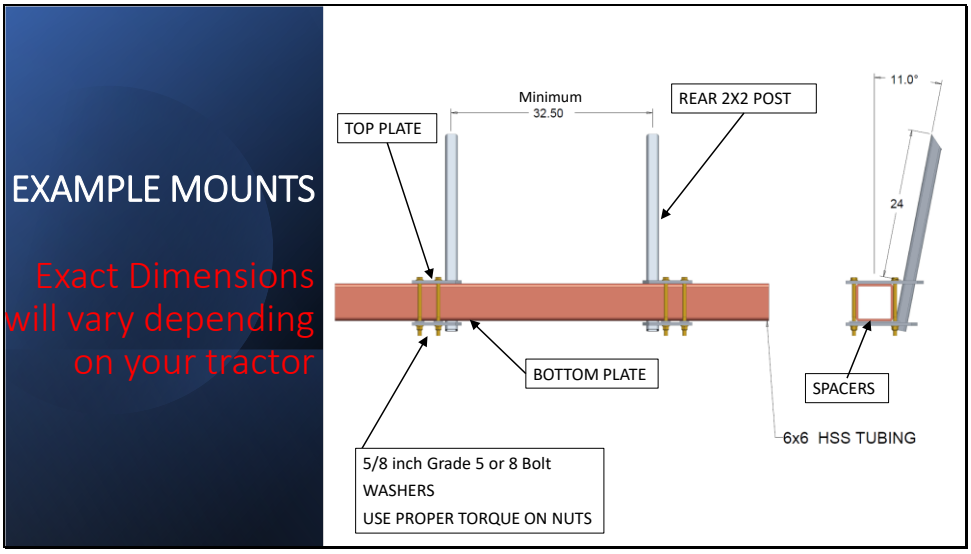
# Mount Preparation

- The mount that fits your tractor will likely need to differ from the drawings of the example mount on the next page
- All mount plates are 8 inches wide X ½ inch thick plate material but length may vary from the drawing depending on your tractor axle; it should be 6.5 inches + axle depth (Example a 5 inch axle depth requires an 11.5 inch mount length)
- The 4 bolt hole locations will depend on your tractor's axle depth dimension and configuration, and make use of any existing indents in the axles
- Bolt holes should be at least ¾ inch away from edge of plate or from square holes
- The 2 front bolt holes should be ¾ inch back from front of plate and be directly ahead of the front of the axle
- The 2 back bolt holes should be directly behind the back of the axle
- Side-to-side, the bolt holes centres should be 3 ¼ inches, apart unless the axle has existing indents for bolts; then the bolt hole pattern should match the existing indents but be as close as possible to 3 ¼ in
- Square holes for stub posts are 2 $^{1}/_{16}$ inches wide and 2 ¼ inches deep:
  - Front to back, the bottom plate square hole should be directly behind the axle and the top mount hole should be back (about ¾ to 1 ¼ inch) so that posts slant back at a 11 degree angle (top of 6 ft posts should be 12-14 inches back from vertical)
  - Side-to side, the square holes should be as close to inside of fender as possible

Slide 11




Slide 12



Slide 13

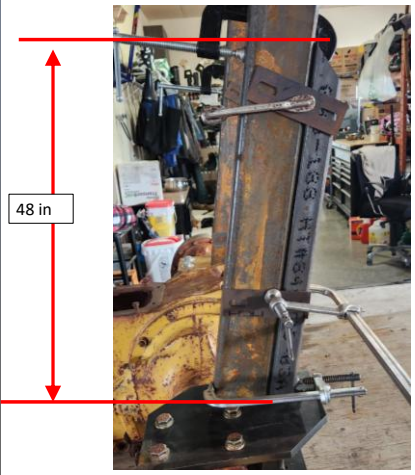
BOLT MOUNT PLATES TO AXLE

INSERT 2X2 STUB POST INTO SQARE HOLES IN MOUNT PLATES (24 in ABOVE TOP PLATE)

TACK WELD

CLAMP MAIN POST TO STUB POST

ENSURE POSTS LEAN BACK 11 DEGREES (12-14 INCHES from VERTICAL)




Slide 14

POSITION TOP BEAM

MEASURE MAIN POST WIDTH TOP AND BOTTOM

CHECK SQUARENESS

TACK WELD POSTS TO MOUNT PLATES

Slide 15

TACK WELD POSTS TO MOUNT PLATES

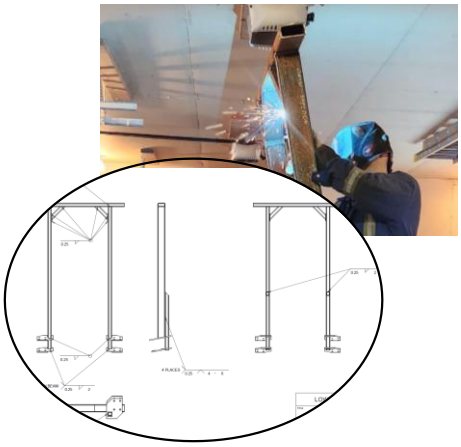
TACK WELD UPPER BEAM

POSITION UPPER GUSSESTS AND TACK WELD

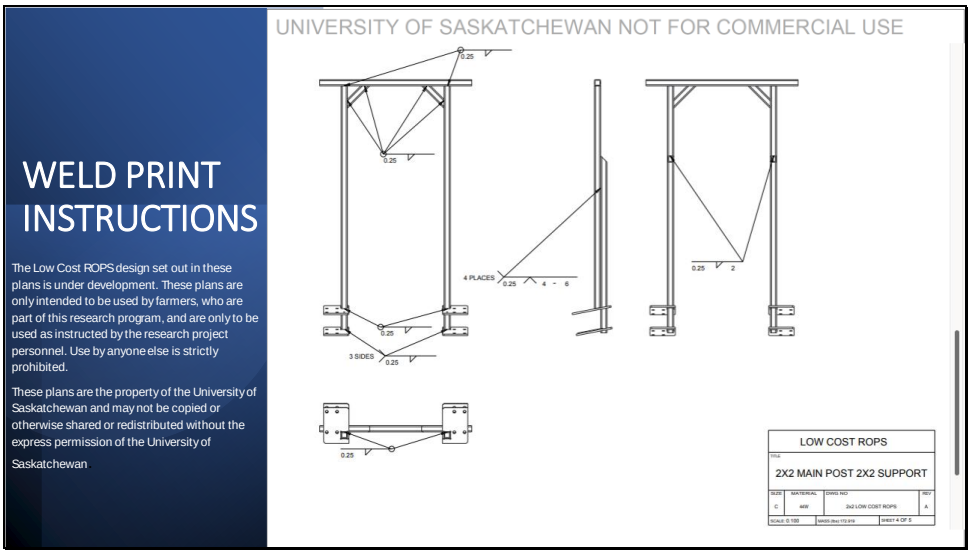

Slide 16

TACK WELDED ROPS CAN BE REMOVEDFROM TRACTOR FOR EASE OF WELDING

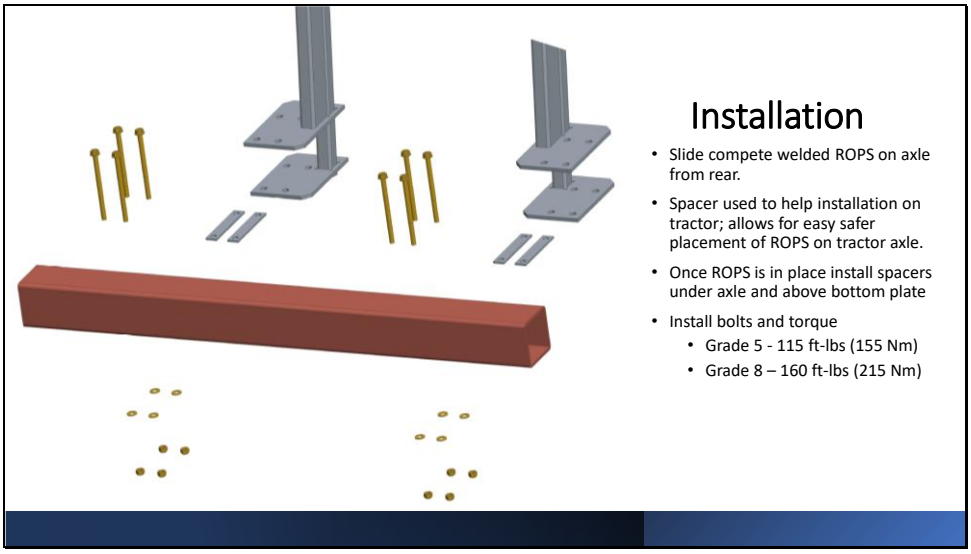
FULLY WELD ROPS STRUCTURE TO FOLLOWING WELD PRINT



Slide 17




Slide 18



Slide 19

## SEAT BELT

- Purchase Seat Belt from Industrial/Automotive/ Agricultural parts supplier
- Attach to sturdy location on seat
  - Use any existing holes of adequate diameter and suitable location or drill ½ inch holes in suitable location
- Use bolts provided with seat belt or 7/16 inch bolts
- Ensure all Operator's wear Seat Belts whenever operating the tractor

Slide 20

## INSPECTION & FABICATION CHECK LIST

- Complete fabrication check list (provided separately) along with pictures and send to the USask ROPS Research Project
- Wait for USask to review check list and pictures and if acceptable, to issue a ROPS LABEL

## Appendix 2: Memorial University Survey Report of Participating Farmers

MEMORIAL UNIVERSITY

School of Human Kinetics and Recreation

Physical Education Building, St. John's, NL Canada A1B 2C3
Tel: 709 864 6936 Fax: 709 864 3979 www.mun.ca

### Roll-over Protective Structures Quality Assurance Evaluation in Newfoundland and Labrador

December 19, 2025

Prepared by: Mr. Jacob Sargent & Dr. Kim Cullen, Memorial University

Prepared for: Mr. Jim Wasserman & Dr. Niels Koehncke, University of Saskatchewan

**BACKGROUND**

The Canadian Centre for Rural and Agricultural Health (CCRAH), based at the University of Saskatchewan, is leading a research initiative titled, *The Low Cost Roll-over Protective Structures (ROPS) Incentive Program for Farmers*. The objective of this program is to increase the prevalence of ROPS on tractors across Canada and in doing so, reduce farm-related fatalities associated with tractor roll-overs.

Previous research has shown that older tractors without ROPS remain common on small farms, and that the cost of commercially manufactured retrofit ROPS is a major barrier to adoption. In response, CCRAH initiated a research program aimed at reducing the cost of ROPS by about 75%. This is accomplished by providing farmers with engineered drawings with professional engineering oversight, enabling them to fabricate safe and affordable ROPS locally.

In Newfoundland and Labrador (NL), the project sought to recruit farmers through the support of AgriCare, a program operated by the NL Federation of Agriculture. Participating farmers completed a welding and fabrication process to build a ROPS for a tractor not previously equipped with one, following the provided engineered drawings and instructions. The primary objective was to evaluate whether NL farmers could easily, economically and safely construct ROPS for their older tractors that meet industry health and safety standards.

**METHODS**

A survey was administered to collect the experience of NL farmers who participated in the ROPS fabrication process. A total of five farmers completed the ROPS fabrication process and subsequently completed the survey. The study received approval by Memorial University's Research Ethics Board (ICEHR #: 20261131). Surveys were conducted either

online or by telephone, based on participant preference. Participants were informed of the voluntary nature of the study and provided their consent prior to data collection.

The survey included a combination of closed- and open-ended questions. Five statements assessing participants' experiences with the ROPS fabrication process were rated using a five-point Likert scale, ranging from "strongly agree" to "strongly disagree". These items addressed perceived ease of fabrication, cost expectations, adequacy of engineering support, perceived impact on safety attitudes, and the perceived value of access to ROPS design materials.

Additional closed-ended questions captured descriptive information, including farming commodity, tractor model, overall satisfaction with the fabrication process, time required for fabrication, and preferred time of year for completing ROPS construction.

Finally, a series of open-ended questions invited participants to elaborate on unexpected benefits and challenges associated with fabricating their own ROPS, provide suggestions for improving the fabrication process, and identify other areas where support for farm safety or machinery performance improvements would be beneficial.

## RESULTS

All participants reported vegetable production as their primary farm commodity, with fruit also reported as a secondary crop type. Forty percent of participants fabricated a ROPS for a *John Deere 320*, 20% for an *International Farmall 120*, and 40% did not build the ROPS for a specific tractor model.

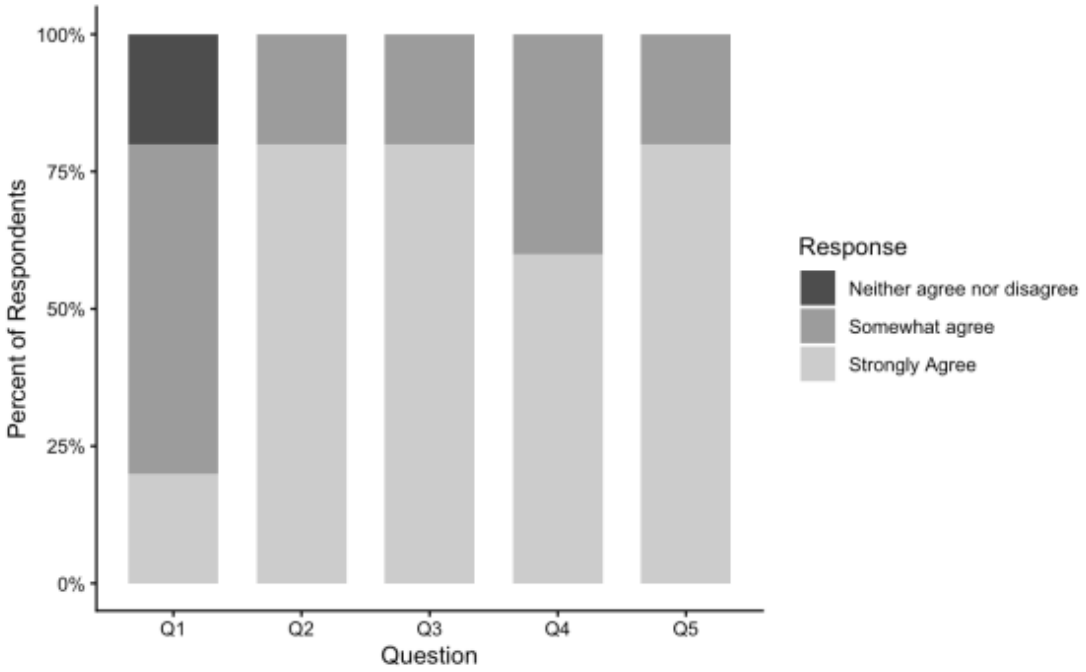
### Perceptions regarding the ROPS fabrication process

Participants responses to the five experience-related statements were overwhelmingly positive, where no participants selected somewhat disagree or strongly disagree for any item (Figure 1).

Eighty percent of farmers somewhat or strongly agreed that fabricating the ROPS was easy and straightforward, while 20% indicated they neither agreed nor disagreed (Question 1). One hundred percent of farmers somewhat or strongly agreed that the cost of fabricating the ROPS met their expectations (Question 2), that adequate engineering support was available during the ROPS fabrication process (Question 3), that the ROPS assembly process positively affected their attitude towards safety (Question 4), and that access to the ROPS assembly design would be beneficial to other farmers (Question 5).

Taken together, these findings reflect a positive overall experience with the ROPS fabrication process, increased safety awareness among participants, and perceived value of access to the ROPS design.

**Figure 1** Percent Reponses for Question 1-5




*Note.* Bars display percent of 100; answers are on a five-point Likert Scale: somewhat disagree and strongly disagree were not chosen by any participants (i.e., 0%).

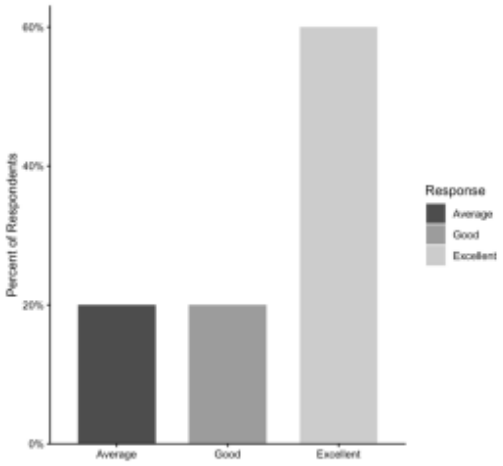
**Overall experience and time commitment**

Participants were also asked to rate their overall experience with the ROPS fabrication process (See Figure 2). Sixty percent rated the experience as "excellent", 20% as "good", and 20% as "average".

When asked about time commitment, most participants (60%) reported that the ROPS fabrication process took 8-12 hours, 20% reported 4-8 hours, and 20% reported 16-20 hours (see Figure 3).

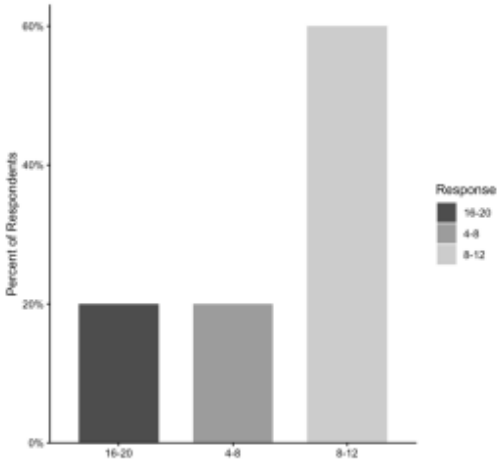
Participants were asked to identify the best month(s) of the year to fabricate the ROPS. Respondents were instructed to select all months that apply; therefore, percentages sum to more than 100%. Most (80%) identified the winter months (January through April) as the preferred time, with 20% also including November and December. Twenty percent also identified the summer months (June through August) as preferrable. One reason for this variation may be differences in access to indoor space for ROPS fabrication.

**Figure 2**: Overall, how did you feel about the ROPS fabrication process?




*Note.* Answers as percents of 100; no participants selected poor and/or terrible.

**Figure 3**: How long did the ROPS fabrication process take (in hours)?




*Note.* Answers as percents of 100.

**Open-ended responses**

Participants provided additional insights through open-ended questions. A summary of what was learned is presented below.

Unexpected benefits.

Participants most frequently identified cost-effectiveness combined with improved safety as key benefits. For example, one farmer noted that the ROPS was "fairly cheap, improves safety, worth the (money) for the safety benefit. (I) feel good that it can save someone's life." Others highlighted the adaptability of the design, noting that commercially available ROPS were not always available for specific tractor models and that the fabricated ROPS could be adjusted to meet individual needs. For example, we heard comments such as: "Could not buy one specific to some tractors" and "we could adjust it according to their specific needs (and) can adjust according to specific tractors".

Unexpected challenges.

Participants reported that the fabrication process was labour intensive. One farmer stated that it was "a lot of work, takes a lot of effort, need(s) three people to move the assembly." Additional challenges included overestimating welding skills and the need for external suppliers to cut steel plates. Shipping the completed ROPS also posed logistical challenges, as testing was necessary to confirm compliance with industry safety standards, as part of the pilot project.

Suggestions for improvement.

Several participants suggested improving the clarity of the fabrication documents. Comments included: "work on the documents to (make them more) easily follow(ed)" and "(a) couple little things in the (fabrication) plan were not crystal clear". One participant specifically noted uncertainty regarding whether (or when) to weld the ROPS posts, suggesting that "... extra clarity (is needed) on that step". Others mentioned logistical support related to transporting components to Newfoundland.

No additional suggestions were made when participants were asked whether there were any other equipment/machines that could be improved for safety.

When asked about other equipment for which they would like assistance to improve machinery performance, participants identified items such as "potato digger" and "...planting equipment, (such as a) transplanter". One participant also suggested the development of an open-source collection of fabrication templates that farmers could access for building common farm implements "... like a bed shaper".

## CONCLUDING REMARKS

Overall, the results of this study indicate that the NL ROPS fabrication project was successful. Participants reported that the ROPS were affordable, straightforward to build, and supported by adequate engineering oversight. The project also positively influenced participants' attitudes towards safety and demonstrated the potential of low-cost, farmer-built ROPS as a strategy for improving farm safety outcomes. Feedback from participants provides valuable guidance for refining fabrication instructions and implementation processes in future iterations of the program.

## Appendix 3: Social Marketing Material

UNIVERSITY OF SASKATCHEWAN
UNIVERSITY OF SASKATCHEWAN
Canadian Centre for Rural and Agricultural Health
CCHSA-CCSSMA.USASK.CA

# Low Cost ROPS Program for Older Tractors in Canada

Wassermann J, Koehncke N
Canadian Centre for Rural and Agricultural Health, University of Saskatchewan

### INTRODUCTION AND OBJECTIVES

**Observations:**

- Tractor rollovers remain a leading cause of death on Canadian farms.
- Roll Over Protective Structures (ROPS) with seatbelts on a tractor are a highly effective method to prevent fatalities from a tractor rollover event.
- However, many tractors on farms do not have ROPS.
- Tractors without ROPS are usually older models on small farms.
- The cost of purchasing a commercial retrofit ROPS is the primary barrier.

**Objectives:**

1. Reduce the cost of ROPS by 75%.
2. Provide farmers with engineered drawings and engineering oversight enabling them to build their own safe and affordable ROPS.
3. Increase the number of ROPS on tractors across Canada and thereby, greatly reduce farm fatalities.

### METHODS

**Target population:**

Canadian farmers that have tractors without ROPS.

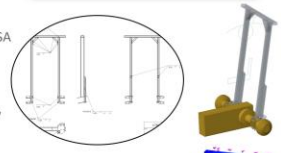
**Project requirements:**

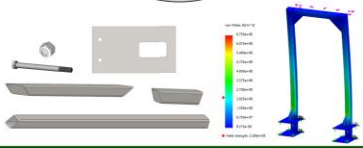
- Design that minimizes components and costs, and easy for the farmer to build
- Meets structural engineering and regulatory requirements
- Verification/auditing system to confirm that all ROPS built by farmers have followed the engineering design drawings and guidelines
- Large sample of ROPS built by farmers and tested to the CSA ROPS test standard
- Knowledge translation and outreach material to promote the program

### METHODS (CONT.)

**Methodology:**

1. Identify prospective farmers with eligible tractors
2. Select appropriate parametric design for their tractor
3. Send drawings, material list and instructions to farmer
4. Farmer fabricates ROPS following instructions
5. ROPS shipped to Saskatchewan for CSA ROPS testing
6. Future – ROPS fabricated by competent farmers are installed on their tractors and remote-certified by qualified engineer





### RESULTS

1. Three parametric ROPS designs have been developed for tractors weighing up to 3000, 7500 and 10,000 lbs.
2. Design process used a combination of finite element analysis (FEA) as well as physical testing to the CSA ROPS Standard M5700.
3. Common materials are used with few components.
4. Lower weld stresses were achieved using increased weld areas and unique mounts with posts embedded.
5. Verification and auditing process is promising. Remote video calls will allow engineers to give farmers timely and specific advice without the cost and time of traveling to the farm.

Current activities are focused on having a larger sample of about 25 farmers in various provinces across Canada each build a ROPS to thoroughly test the process.

Without ROPS

With ROPS

### IMPLICATIONS AND CONCLUSIONS

- Significant health and safety benefits for farmers in Canada.
  - Help eliminate one of the leading causes of death on farms.
  - Decrease barriers to having ROPS on all tractors in Canada with this low-cost solution.
- Assist farm safety professionals and regulators who struggle with the challenge of having no affordable solution to equip older tractors with ROPS.
- Farmers become part of the solution.
  - Enables farmers to use their skills and initiative to solve a major farm safety problem.
  - Can help stimulate an improved culture regarding overall farm safety

### REFERENCES

Springfeldt B. et. al. Sweden's Thirty-year Experience with Tractor Rollovers. Journal of Agricultural Safety and Health 4(3): 173-180

Karunanayake CP, Koehncke N, Enebeli S, Ulmer K, Rennie DC. Trends in Work-Related Fatal Farm Injuries, Saskatchewan, Canada: 2005-2019. J Agromedicine. 2023 Jul;28(3):444-455.

Agriculture-Related Fatalities in Canada: 1990-2020. Canadian Agricultural Injury Reporting. https://casa-acsa.ca/en/cair/

### ACKNOWLEDGEMENTS

This project has been funded by:

wcb Saskatchewan Workers' Compensation Board
WorkSafe Saskatchewan Work. to live.
WorkplaceNL Health | Safety | Compensation
Government of Saskatchewan
AGRIVITA CANADA INC.
Agriculture and Agri-Food Canada / Agriculture et Agroalimentaire Canada

# NLFA LUNCH & LEARN

**Location:** The Pye Centre, Happy Valley-Goose Bay, NL

**Date:** July 16, 2025

**Time:** 10:00 AM – 3:00 PM

## PROGRAM AGENDA

**I. WELCOME & OPENING REMARKS** — **10:00 – 10:15 AM**

*NLFA Staff Presenters*

**II. AGRICARE NL: INTRODUCTION & PROGRAM UPDATES** — **10:15 – 11:15 AM**

**MENTAL HEALTH & SAFETY PROGRAMMING FOR NL FARMERS**

*Kylie Stokes, AgriCare NL Coordinator; Jim Wassermann, ROPS Program Lead Engineer, University of Saskatchewan*

NETWORKING BREAK — 11:15 – 11:30 AM

**III. "IN THE KNOW": UNDERSTANDING MENTAL HEALTH IN AGRICULTURAL POPULATIONS** — **11:30 – 12:15 PM**

*Kylie Stokes, AgriCare NL Coordinator*

LUNCH & NETWORKING BREAK — 12:15 – 1:00 PM

**IV. NL LIVING LAB / AAFC PRESENTATION** — **1:00 – 1:20 PM**

*Tyler Buckle, Living Lab Coordinator, Agricultural Climate Solutions NL*

*Linda Jewel and Tobias Leangle, Agriculture and Agri-Food Canada*

**V. GOV NL PROGRAMS UPDATE** — **1:20 – 1:40 PM**

*Crystal McCall, Agriculture Research Manager, Gov NL*

**VI. ON-FARM CLIMATE ACTION FUND (OFCAF) PRESENTATION** — **1:40 – 2:10 PM**

*Rodney Reid, Climate Change Manager, Agricultural Climate Solutions NL*

**VII. LIVING LABS SITE VISIT / AAFC UPDATE** — **2:10 – 2:55 PM**

*NL Living Lab Staff Presenters*

**CONCLUSION & WRAP-UP**

NEWFOUNDLAND & LABRADOR FEDERATION OF AGRICULTURE

# ROLL-OVER PROTECTIVE STRUCTURES (ROPS)

**National low-cost pilot program seeking Newfoundland and Labrador farmers**

Are you an NL farmer with an older tractor?

Can you weld?

You may qualify for material cost funding—ask us!

**Participation Deadline November 1, 2025**

Visit **nlfa.ca/rops-apply** to apply!

We provide farmers with the materials and guidance needed to install their own aftermarket low-cost ROPS —directly reducing the risk of serious and fatal injury to operators caused by tractor roll overs.

## ROPS Program Fast Facts

When installed properly and used with a seatbelt, ROPS have a 99% success rate for preventing injury and death during a roll over

Tractors manufactured prior to 1980 may not have roll over protection

This puts farmers, their families, and their employees at risk of injury or death. It also leaves business owners vulnerable to Occupational Health and Safety (OHS) compliance issues

Our goal is to support farmers so they can address these risks in a low-cost manner, without negatively impacting their business

## Have questions?


Jim Wassermann
Agricultural Engineer
**jim.wassermann@usask.ca**

Kylie Stokes
AgriCare NL Coordinator
**kylie@nlfa.ca**


University of Saskatchewan

Canadian Centre for Rural and Agricultural Health