



Smart Ag Research

North Star Systems: Bin Inventory Level Monitoring Product Evaluation 2024

In 2024, Olds College Centre for Innovation collaborated with North Star Systems to test a radar device designed to measure large inventories of bulk dry products in grain bins. The testing at the Olds College Smart Farm generated high-quality datasets that helped validate the device's accuracy and assess its real-world performance.

INTRODUCTION

North Star Systems is developing a product to monitor inventory levels of dry bulk products within grain bins, making use of their existing IoT (internet of things) devices. Their objective was to deliver a cost-effective solution for calculating and monitoring grain inventory for accurate and safe measurements. North Star Systems worked with OCCI in the fall of 2024 to conduct accuracy testing of their radar equipment using the grain bins and resources of the Olds College Smart Farm.

OBJECTIVES

- Assess the product installation process
- Identify if positioning of the device within the attic space of the bin impacts the measurement
- Evaluate the reliability of the hardware

STUDY DETAILS & RESULTS



- Olds College installed four North Star Systems radar devices into grain and feed bins at different positions
 - OCCI conducted three iterative tests cycles between August and December with devices installed in the bin
- After each cycle, OCCI provided datasets to North Star Systems for evaluation
 - North Star Systems used the data to refine their firmware, software, and installation process

- OCCI repeated the trials following North Star Systems updates to validate improvements
- Two devices were installed in a feed bin at the Olds College Smart Farm
 - The feed bin's inventory was used daily for livestock, allowing the devices to monitor continuously changing inventory levels
 - As a result from of the long-term feed bin installation, OCCI was able to analyze reporting consistency of each device through the winter months
- Usability and safety enhancements were identified by OCCI for North Star to enhance their product
- The two long-term feed bin installation enabled the team to identify any gaps in data reporting

NEXT STEPS/FUTURE RESEARCH

The outcomes of this work have provided North Star Systems with valuable insights to guide future research initiatives.

