

# Clean Resources

Smart Agriculture and Food

## FUNDING DETAILS

### Enhancing Agriculture Technology for Improved Productivity, Efficiency and Sustainability

With a growing world population, the agriculture industry is seeking new ways to meet the food needs of the future. The development and application of innovative smart agriculture technologies is a promising approach to increase both the quantity and quality of agri-food products. Smart technologies require field-testing and verification of the return on investment for producers before the technologies are adopted on farms. This project focuses on the implementation, knowledge translation and commercialization of four agriculture technology solutions: 1) validation of imaging technology for assessing priority traits in Canadian Angus; 2) evaluation of energy-use and water-use efficiency under the robot and parlour dairy systems; 3) calibration of in-bin drying; and 4) data collection and utilization of data for cropping decisions. The results will improve agricultural productivity, efficiency and sustainability in Alberta and Canada.



#### RECIPIENT:

**Lakeland College**  
**PI: Josie Van Lent**



#### PARTNERS:

**Alberta Milk**  
**Canadian Angus Association**  
**METOS Canada**  
**Top Grade Ag**



#### TOTAL BUDGET:

**\$150,450**



#### AI FUNDING:

**\$99,850**



#### PROJECT DATES:

**March 2020 –**  
**October 2021**



#### PROJECT TRL:

**Start: 8**  
**End: 9**

## APPLICATION

Technology failure rates are significant when technologies are developed in a laboratory and not tested under real-world circumstances. Through this project, Lakeland College is trialing, optimizing and validating four distinct agriculture technology platforms related to crops, beef and dairy production in real farm-level environments. The research outcomes will help remove barriers to technology adoption prior to commercialization and enhance commercial agriculture in our province.



# Clean Resources

## Smart Agriculture and Food

### PROJECT GOALS

- Promote development, implementation, validation, knowledge translation and commercialization of technologies that will impact productivity and efficiency of the agriculture industry in Alberta and Canada.
- Validate the adoption of the automatic scanning system “Mobile Beef Measurement Unit” to assess body condition traits in Canadian Angus.
- Evaluate and optimize energy-use and water-use efficiency under robot and parlour systems in the dairy industry.
- Develop accurate in-bin, sensor-mediated drying procedures in conjunction with agronomy-based optimal harvest timing, to increase profitability and efficiency of grain farming operations.
- Demonstrate the functionality, connectivity and value of data from a common suite of soil, climate and crop sensors for cropping systems across Canada.

### BENEFITS TO ALBERTA

- Decrease barriers to smart technology adoption and provide valuable data under real farm circumstances to drive best management practices and enhance agriculture competitiveness, efficiency, profitability and sustainability.
- Increase profitability and sustainability for the beef industry through validation of the Mobile Beef Measurement Unit, which will reduce the time and costs associated with the assessment of Angus longevity, health and welfare.
- Guide the dairy industry on ways to reduce its energy and water footprint and set benchmarks that will strengthen policies and practices for the industry.
- Develop a knowledge-based grain harvesting guideline, which will give farmers in Alberta the ability to dry grain more economically and provide confidence that yield and quality will be preserved.
- Contribute to a network of smart farms where common infrastructure is established at multiple sites in different regions of Alberta and Canada for comparisons of data collected and collaborative analysis.



7 Publications



>200 Students  
Trained



6 Project Jobs

### CURRENT STATUS

#### October 2021

Equipment installation, trials, data collection and data analyses are ongoing for the four projects across various sites on the Lakeland College campus and additional Alberta sites as required. Collectively, these sites provide the opportunity to demonstrate smart farm technologies to future agricultural workers (i.e., students), as well as to translate the information to industry. Results on the efficiency, productivity and sustainability from these four projects in beef, dairy, cropping and post-harvest management will be available in late 2021.