ALBERTA INNOVATES

CLEAN RESOURCES

AGRI-FOOD INNOVATION

AGRICULTURE BIOTECHNOLOGY

Optimization of Non-Contact Sensing Technologies to Enhance Sustainability of Bison Farming

Canada has a bison herd of 120,000, 50% of which are raised in Alberta by 445 of the 975 national producers. The development of remote technologies to assist with herding, managing and monitoring bison safely and towards optimal production is increasingly important as herd production evolves. This project aims to optimize the use of non-contact sensing technologies and greater data coverage to monitor the performance, health status, breeding and welfare of bison without interfering with their routine and environment. This will help reduce significant distress, loss of productivity and even death in this species.

FUNDING DETAILS

RECIPIENT:
Lakeland College
PI: Yuri Montanholi

PARTNERS:
OneCup AI
AFRED, UofBonn
TRU, AgSights

TOTAL BUDGET:
$639,998

AI FUNDING:
$345,081

PROJECT DATES:
JAN 2022 – DEC 2023

PROJECT TRL:
Start: 3
End: 8

APPLICATION

Application of multiple remote imaging sensing technologies mounted on a self-weighing livestock scale will enable individual and herd monitoring of individual facial identification, production performance, health traits and reproductive records. The advanced imaging innovation will be combined with a bison herd management application to host biological information, productive performance and herd structure data to support decision-making.

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PROJECT GOALS

- Optimize production efficiency of bison.
- Optimize the quality of bison products.
- Optimize bison animal welfare.
- Enhance the safety of bison handlers and ranchers.
- Advance knowledge about the bison species and enable unique learning experiences for students and industry stakeholders.

BENEFITS TO ALBERTA

- Business opportunities for companies selling research/livestock hardware (i.e., self-weighing scale, thermal cameras, radio-frequency identification tags).
- Future expansion of the industry (Alberta already has half of Canada's bison herd) due to sharing of knowledge about advanced technologies applied to bison farming.
- More students will be attracted to Lakeland College and other post-secondary institutions in Alberta due to a greater demand for high quality and skilled personnel to support the bison industry demand for technology implementation.
- Stronger options for commercializing value-added bison products which will benefit small producers, local restaurants, farmers markets and meat shops.

10 Publications

10 Students Trained

5-7 Project Jobs

25-35 Future Jobs

1 New Product/Service

1 Patent

23 kT/yr Project GHGs Reduced

CURRENT STATUS

JAN 2022

Bison self-weighing and multiple imaging system hardware development (the innovation prototype) and experimentation with feedlot (confined) bison including slaughter (blood) sampling and carcass data collection has begun. Application of GPS collars to monitor activity and application of drone imaging to complement the other imaging and GPS tasks is also starting, along with initiation of the platform to combine biological and herd management data.