

2022 INNOVATION AWARD

GrainViz



The GrainViz project represents the evolution of electromagnetic imaging technology that generates a 3D moisture map of the contents of the grain stored in steel-walled container bins. This electromagnetic imaging concept was originally studied under the guidance of Professor Joe LoVetri by Ph.D. research students Colin Gilmore and Ian Jeffrey to detect breast cancer in a medical environment. At the suggestion of Professor Jitendra Paliwal, this concept was investigated and adapted to the grain imaging application.

Initial encouraging test results of the technology on the University of Manitoba grain storage research container motivated the group to seek commercialization and gave birth to the name GrainViz in 2017. The continuous research that spanned more than ten years involved two University of Manitoba labs, Electromagnetic Imaging and Grain Storage Research, working in collaboration with the start-up 151 Research Inc.

All aspects of the system, including the design and manufacture of custom hardware, development of novel algorithms, and imaging software were made possible by the unique collaboration between the two University of Manitoba labs with 151 Research, and ultimate partnership with multi-national agricultural conglomerate AGCO Corp since 2020. This has brought tens of millions of dollars to the Manitoba economy, has trained about 20 graduate students and several post-doctoral fellows and research associates, leading to a dozen academic publications and six patents.

By using the GrainViz system, managers can detect and prevent spoilage, as well as maximize the crop value by appropriately timing sales. This is estimated to have the potential to benefit Canada economically by hundreds of millions of dollars annually and has already generated 47 full-time equivalent jobs in Manitoba with a heavy emphasis on engineering and technical staff.

In recognition of the innovation, collaboration, and engineering excellence demonstrated in the GrainViz system, Engineers Geoscientists Manitoba is pleased to present the 2022 Innovation Award to Joe LoVetri, Ian Jeffrey, P.Eng., Jitendra Paliwal, P.Eng., FEC, Colin Gilmore, P.Eng., Mohammad Asefi, EIT, Braden Pierce, P.Eng., and Paul Card.