

Smart Ag Research

2025 High Density Hail Scouting

INTRODUCTION

Starting in 2023, Olds College Centre of Innovation (OCCI) and AFSC have worked together annually to conduct hail scouting events where drone imagery is used to determine locations within selected fields affected by hail damage to then scout. Once the scouters reach each predetermined location a AFSC hail adjustment calculation was conducted to determine the level of hail damage the area had received within wheat, barley, and canola fields. From the datasets that were collected spatial maps were produced to represent the variability of damage throughout a certain field. During the 2025 season 10 fields were scouted, totalling 1,592 acres, and were added to the imagery database.

OBJECTIVES

Create a database of collected remote sensing imagery as well as scouting data for fields that had been damaged by hail. Scouting records consist of AFSC hail adjustments, scouting documentation and drone imagery of each field.

STUDY DETAILS

Ten fields damaged by hail within central Alberta were flown with drones to collect numerous sets of imagery and a layer of in-field scouting data.

- Each field had multiple drone flights conducted with multispectral and thermal sensors mounted.
- The drone flights used ground control points allowing for accurate spatial referencing between the different flights.
- Following drone imagery, the images were processed and reviewed, scouters selected locations within the field to ground truth and collect a hail adjustment measurement. At each point, the following information was collected:
 - hail damage severity;
 - crop staging and general notes of the area;
 - in-field photos at each location; and
 - documentation of damage such as lodging, drowned crop, seeding and spraying equipment errors and wildlife damage.

RESULTS

Since 2023, imagery and respective scouting datasets have been organized into a data base that now contains 25 fields totalling 3,733 acres. This dataset allows for continued validation and testing of emerging technology in regards to digitally measuring damage and the causes of the damage.

NEXT STEPS/FUTURE RESEARCH

In addition to other research projects being conducted in 2026, additional imagery and scouting datasets will be collected if any crops on the Olds College Smart Farm are significantly damaged by hail.

