

Exclusion Zones Analysis

Different factors, such as topography or soil variability, result in areas of the field that generate negative returns or are challenging to cultivate. As a result, these areas are often not seeded, resulting in what will be referred to as Exclusion Areas. In 2025, the Olds College Centre for Innovation (OCCI) partnered with Farm Credit Canada (FCC) to identify and classify the factors that contribute to those Exclusion Areas.

OCCI evaluated 1,913.13 acres of land total in Alberta and Saskatchewan to assess areas that had been excluded from cultivated cropping practices.

There are several reasons producers don't seed these areas. Using large heavy equipment in wet soils can result in equipment failure, leading to costly repairs and downtime. Agronomically, seeding into wet soils can result in poor seed to soil contact, lower germination rates and increased risk of some diseases such as root rot.

INTRODUCTION

From April 2025 to October 2025, the Olds College Centre for Innovation (OCCI) aimed to identify exclusion areas in each of the Olds College Smart Farm (OCSF) cropping fields. These exclusion zones encompass areas that are not included in regular cropping practices due to various factors, such as wildlife-protected areas or unproductive land. The goal is to understand why these areas are designated as exclusion zones and the rationale behind their designation, as they may be valuable land that could be used for cultivated cropping.

OBJECTIVES

- Identify the exclusion areas of the OCSF fields.
- Classify the exclusion areas by the reason they are not used.
- Quantify the exclusion areas in the specific fields.

STUDY DETAILS

Utilizing the as-applied seeding data from 2025, areas that were excluded from cultivated crop land were identified and put into the ArcGIS application Field Maps. Scouters visited each field to collect on-site information, including visual observations and drone imagery of each area being excluded, and categorized the areas into the following categories. The assessed fields were: in Alberta, 2E, 13, 15/16, 17, 18, 19 and Steckler. In Saskatchewan, E10, NW11, SE14 and SW11.

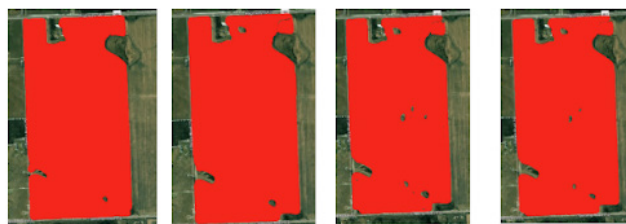
Exclusion areas were classified into the following eight categories:

- 1. Agriculture Land Leasing:** Consists of areas that are leased to oil and gas companies or similar activities, and culturally sensitive areas.



- 2. Ephemeral and Intermittent Waterways:** Consists of areas that have temporary or permanent standing or flowing water or low spots within the field (too wet to seed).

As-Applied Seeding Map for Steckler from 2022 - 2024. Showing the difference in seeding acres impacted by intermittent waterways.



- 3. Inaccessible Field Area:** Areas of the field that consist of steep hills, awkward corners, and areas that are inaccessible to equipment.



- 4. Infrastructure:** Roadways, shops or buildings, fences, garbage piles.



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- 5. Ecological Reserve:** Areas preserved for wildlife (conservation agreements or other), treed areas and native prairie.



- 6. Rock Piles:** Areas where rocks have accumulated over the years due to producers piling them there to reduce equipment damage.



- 7. Buffer Ditch:** Areas identified by the county that act as drainage control for heavy rains or snow melt and for soil conservation.



- 8. Shelter Belt/Trees:** Areas where trees, shrubs or crops are grown with the intent to provide shelter to crops or livestock, reduce erosion and conserve moisture.



RESULTS

The 2025-2026 Exclusion Zone Analysis successfully identified and classified areas across the Olds College Smart Farm that were removed from cultivated cropping. Across 1,913.13 assessed acres in Alberta and Saskatchewan, a total of 225.94 acres (11.81%) were excluded from production for reasons ranging from natural landscape limitations to long-term management decisions. The most prevalent exclusion areas were ephemeral and intermittent waterways, buffer/ditch areas, and ecological reserves, highlighting the influence of moisture dynamics and environmental stewardship.

By integrating satellite imagery, as-applied seeding data, drone scouting, and on-site assessments, this project created a comprehensive understanding of how various factors shape land useability. The results emphasize that exclusion areas are not solely unproductive land; they often encompass legally protected areas, critical habitat, essential drainage systems, or areas with physical constraints that limit equipment access.

Total Excluded Areas from Cultivated Cropping Operations.

Classification	Total Acres Identified	Percentage of total land
Agriculture Land Leasing	0.68	0.04%
Ephemeral and Intermittent Waterways	99.93	5.22%
Inaccessible Field Area	17.18	0.90%
Infrastructure	25.67	1.34%
Ecological Reserve	32.15	1.68%
Rock Piles	0.85	0.04%
Buffer Ditch	43.33	2.26%
Shelter Belt/Trees	6.16	0.32%
Total	225.94	11.81%

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Field 18/19, Alberta.



Field E10, Saskatchewan.



NEXT STEPS/FUTURE RESEARCH

This analysis provides OOCl and FCC with a clearer understanding of future land-use planning. The categorization of exclusion zones supports informed decision-making around field opportunities such as remediation potential, field improvement opportunities, and long-term agricultural sustainability. Continued monitoring, paired with targeted economic evaluations, will further help to understand how exclusion areas impact overall farm operations.