

Cover Cropping Focused Practices

While cover cropping is a long-established agricultural technique, growers are increasingly innovating its use in sustainable farming. Southern Alberta presents unique challenges and strategies, including irrigation, specialty crops, a shorter growing season, and semi-arid, windy conditions.

Project: Nurse Cropping with Barley before Canola

Exposed soil before crop establishment, especially in windy areas like southern Alberta, can lead to wind erosion damage. A "nurse crop" protects vulnerable crops like canola, whose growing point is above the soil and prone to erosion. Barley is an ideal nurse crop as it emerges quickly, has an upright posture with an open canopy, is less competitive than other cereals, uses less water, and is easy to manage. This makes it effective for protecting crops like canola, sugar beets, and onions from wind and soil erosion. **The question was- does this practice introduce crop competition and take away early season nutrients for the canola?**



Key Learnings

- Between plantings of no barley, 1 bu/ac, and 2 bu/ac there was no marked difference in soil nutrient availability (based on PRS Probes) or in crop biomass suggesting there is no measurable crop competition
- Barley was planted around a month prior to canola planting and was at 3 leaf stage and was sprayed out before in-season herbicide



PRS Probes – what are they?

Different than traditional soil tests, plant root simulator probes are resin membranes that are inserted into the soil to attract available nutrients in the soil.

Can measure available nutrients during a span of time, and mimic what a plant's roots have access to



Project: Direct planting potatoes into fall rye

In potato production, farms are challenged by specific times in the season when there is little to no residue on the field where it is at risk to wind erosion. After fall preparation of hills and after planting and after harvest are opportunities for a farm to establish cover on a field. One farm seeks to address this challenge by broadcasting fall rye seed after fall hilling in the fall then planting both directly into the living rye in the spring and into sprayed out rye.

Key Learnings

- Observations through the growing season showed no measurable difference between the two difference plantings
- Planting into living fall rye can be difficult due to rye clumps and biomass. The farm did add a slight modification to planter to assist in this endeavor.





Intercropping—growing two or more crops together—optimizes resources like sunlight, water, and nutrients while diversifying production to reduce risk. When managed effectively, it can improve soil fertility, reduce pests and diseases, and enhance productivity. However, managing multispecies fields presents unique challenges.

Projects:

- 1. Wheat/Barley/Pea Silage:** Aimed to increase nitrogen fixation and boost feed protein content.
- 2. Barley/Pea/Rye Hay:** Designed for cutting, with rye regrowth providing field cover.

Key Learnings:

- **Advantages:** Increased diversity, improved feed quality, pest and disease reduction, and risk mitigation.

Seeding: Blended crops (e.g., peas with cereals) were easy to seed, with compatible planting depths.

Challenges:

- Peas mature earlier than cereals, requiring careful variety selection.
- Cereals often outcompete peas.
- In-season weed control is difficult; pre-plant and pre-emerge strategies are recommended.
- Crop insurance classification for multispecies blends can be challenging.

Harvesting: Neither project was harvested for seed, but local growers have successfully separated seeds from intercrops.

Conclusion: Intercropping offers significant benefits but requires careful planning to address challenges like competition, weed control, and crop maturity differences.



Example of the replicated small plot planting date trial in field

Projects: Winter Wheat Cover After Potato Harvest

Two fall projects are exploring the use of winter wheat and other cereals for soil cover following potato harvests.

- **Winter Wheat Planting Dates:** This project tests planting dates from mid-September to mid-October to determine the latest viable planting window for winter wheat. Plant emergence, growth, and ground cover are being monitored through winter and spring, with results expected by Spring 2025.
- **Soil Cover with Cereals:** Winter wheat, barley, and winter triticale are being evaluated for soil cover (not harvestable crops). The study focuses on balancing planting populations for optimal soil protection and cost efficiency. Results will be available by Spring 2025.

Key Learnings (Preliminary):

- Initial data on the latest viable planting date for winter wheat and associated heat units.
- Comparisons of soil cover effectiveness between winter wheat, barley, and winter triticale.

Conclusion: These projects aim to provide practical insights into fall planting strategies for soil cover and crop viability, with results expected in Spring 2025.