Enhancing AgroEcosystem Services
The Peace Region Living Lab 2025 Update

Funded by Agriculture and Agri-Food Canada through the Agricultural Climate Solutions Living Labs Program, and Cargill

Background

The Peace Region Living Lab (PRLL), is an initiative dedicated to advancing innovative best management practices (BMPs) that positively impact environmental factors such as carbon sequestration, greenhouse gas reduction, and other environmental co-benefits. This program commenced in 2022 and is set to run until March 31, 2027. PCBFA is a proud partner of the Peace Region Living Lab and is collaborating with core producers across 10 different sites in the Peace Region (Figure 1), focusing on farming activities categorized into two groups: Beneficial Management Practices (BMPs) and Checks.

1. **Diverse Practices Under BMP Fields:** The BMP fields demonstrate a wide variety of innovative practices, such as intercropping (e.g., Canola/Oats/Peas, Wheat/Canola), cover cropping, rotational grazing, and sod seeding with legumes. These approaches aim to enhance soil health, forage quality, and overall land productivity, showcasing the adaptability of producers in implementing sustainable farming methods.
2. **Comparative Insights Between BMP and Check Fields:** The Check fields typically follow conventional practices, such as monocropping and traditional hayland or pasture management. In contrast, BMP fields integrate innovative strategies that promote biodiversity and ecosystem services, offering valuable opportunities to compare the long-term environmental and economic impacts of traditional versus innovative agricultural practices.

Extended Grazing Tour

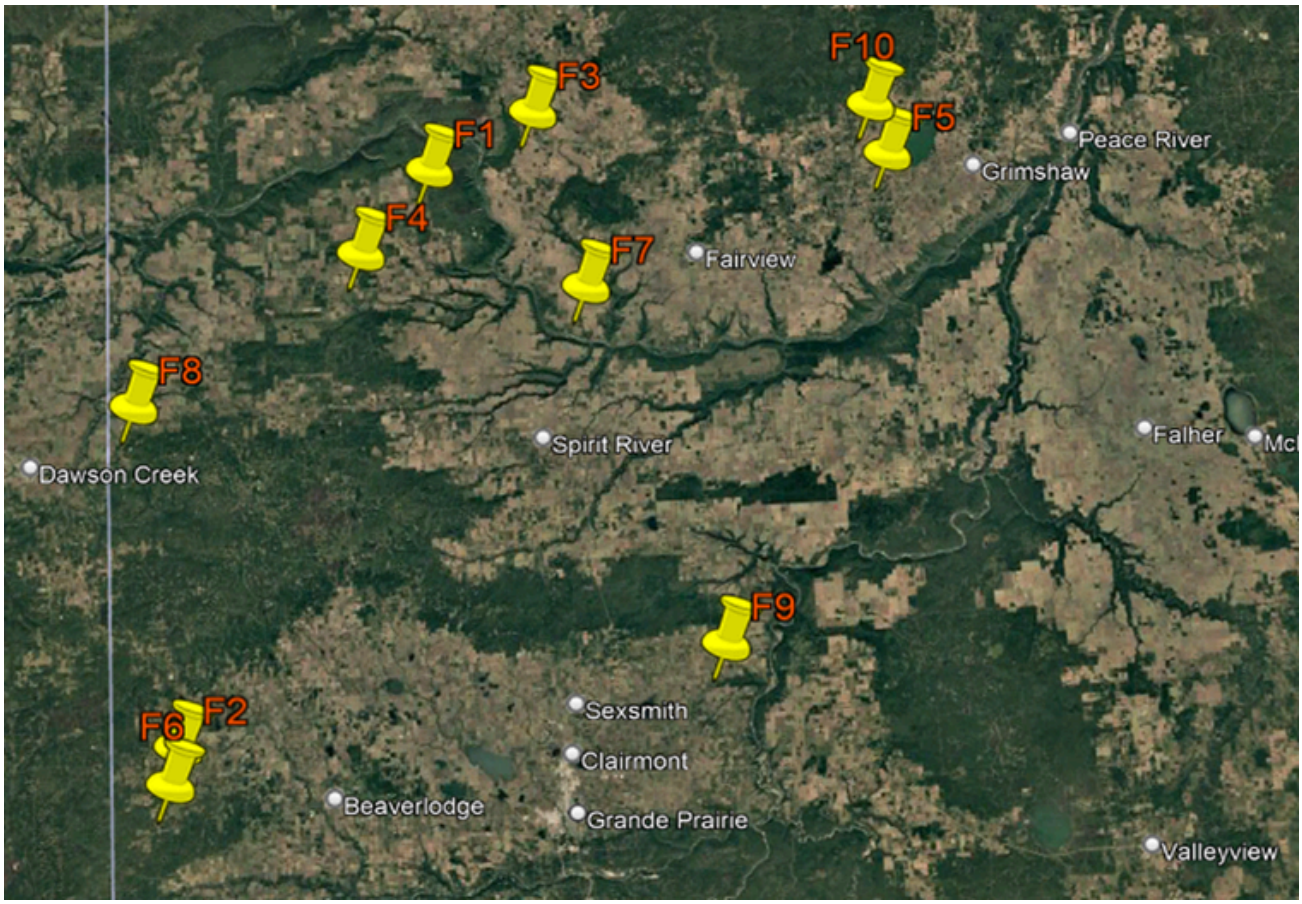

Figure 1. Peace Country Beef & Forage Association's 10 core producer sites.

Methods

As an integral part of the Living Lab initiative, PCBFA continues to collect extensive yearly field data to assess co-benefits associated with soil health and productivity. Key measurements include:

Soil Health Parameters: Soil compaction (measured with a SpotOn digital penetrometer), infiltration rates (using the single-ring method), bulk density, volumetric water content (via Time Domain Reflectometry-350), soil visual assessments, and soil sampling for microbial analysis and carbon sequestration estimates.

Insect Monitoring: Sweep nets and traps are used during the growing season to identify beneficial and predatory pests.

Forage, Hay, Silage, and Grain Productivity: Regular evaluations of crop performance and yield.

Soil cores are collected at depths of 0-6" and 6-12" to analyze nutrient availability and microbiology, providing critical insights into the impacts of innovative management practices on soil and ecosystem health.

Table 1. The activities undertaken on the BMP and Check fields during the 2024 and 2025 growing seasons. Some sites have more than one BMP.

Field #ID	Producer activities undertaken in 2024 and 2025 growing seasons			
	BMP		CHECK	
	2024	2025	2024	2025
F1	Peas underseeded with winter wheat	Winter wheat	Peas	Spring wheat
F2	1. Pastureland with trees	1. Pastureland with trees	Hayland	
	2: Pastureland	2. Pastureland		Hayland
F3	1. Wheat and Flax	1. Fallow	Round-up Ready Canola	Wheat
	2. Peas and Oats	2. Wheat and Canola		
F4	Hayland with compost tea application	Hayland with compost tea application	Hayland	Hayland
F5	Cover crop blends	Cover crop blend	Hayland	Hayland
F6	Bale grazing	Bale grazing	Pastureland	Pastureland
F7	Corn for winter grazing	Cocktail blend	Hayland	Hayland
F8	Pastureland - rotational grazing	Pastureland - rotational grazing	Hayland	Hayland
F9	1. Feed legume seeds to cows with minerals	1. Feed legume seeds to cows with minerals	Grass-dominated pasture	
	2. High stock density grazing followed by direct seeding	2. High stock density grazing followed by direct seeding		Grass-dominated pasture
	3. Break and re-seed high legume pasture mix	3. Break and re-seed high legume pasture mix		
	4. Haybale grazing dominated by cicer milkvetch pods	4. Haybale grazing dominated by cicer milkvetch pods		
F10	1. Sod seeding yellowhead alfalfa	1. Sod seeding yellowhead alfalfa	Grass-dominated pasture with volunteer cicer milkvetch	Grass-dominated pasture with volunteer cicer milkvetch
	2. Sod seeding Spredor alfalfa and sainfoin	2. Sod seeding Spredor alfalfa and sainfoin		
	3. Sod seeding Spredor alfalfa and cicer milkvetch	3. Sod seeding Spredor alfalfa and cicer milkvetch		

Preliminary outcomes from selected sites

Forage Dry Matter (DM) Yield

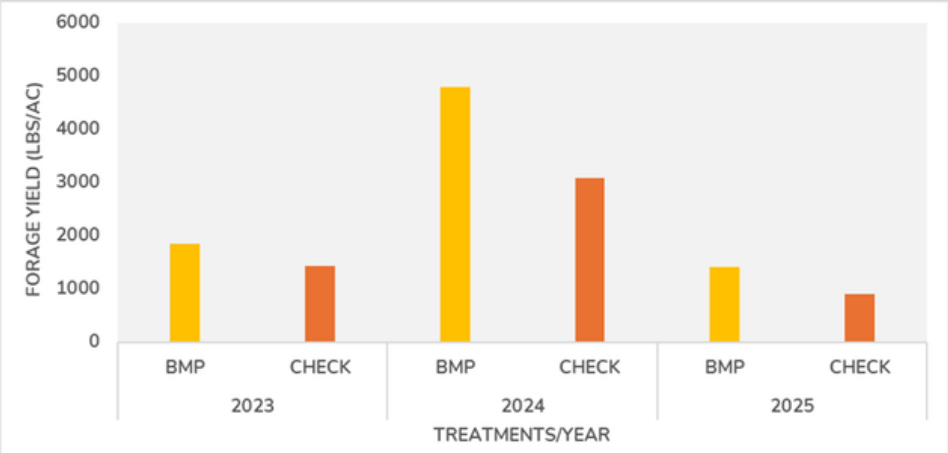

Figure 2. Yearly forage dry matter yield accrued by individual treatments (BMP vs. CHECK) from site F5

Key Observations:

- The BMP field has been more productive than the Check field.
- Overall, both fields had higher yields in 2024 but lowest in 2025.

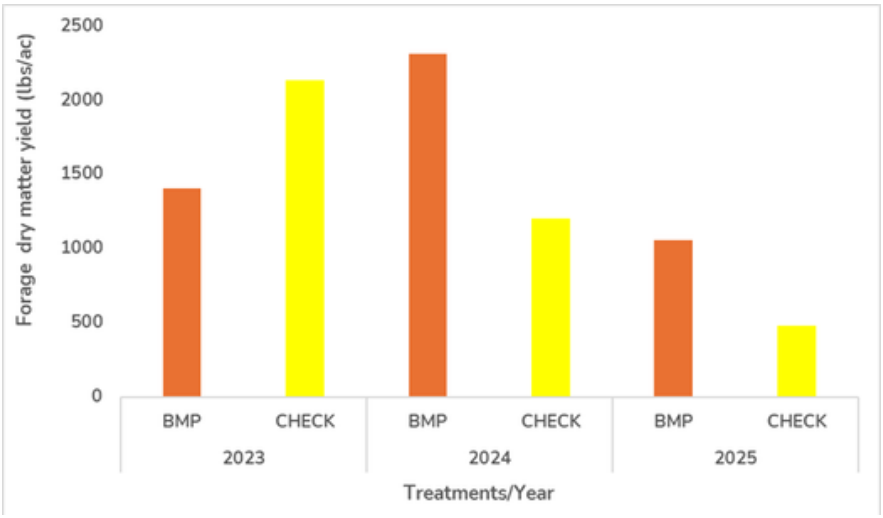

Figure 3. Yearly forage dry matter yield between the BMP and CHECK fields obtained from site F6

Key Notes:

- The Check field produced more forage than the BMP in 2023. This phenomenon changed in both 2024 & 2025, where the BMP field had the highest forage yield.
- The high yield in 2023 was commensurate with soil moisture during the growing season.
- Overall, it was evident that the BMP field was more productive than the Check field.

Soil Infiltration Rates

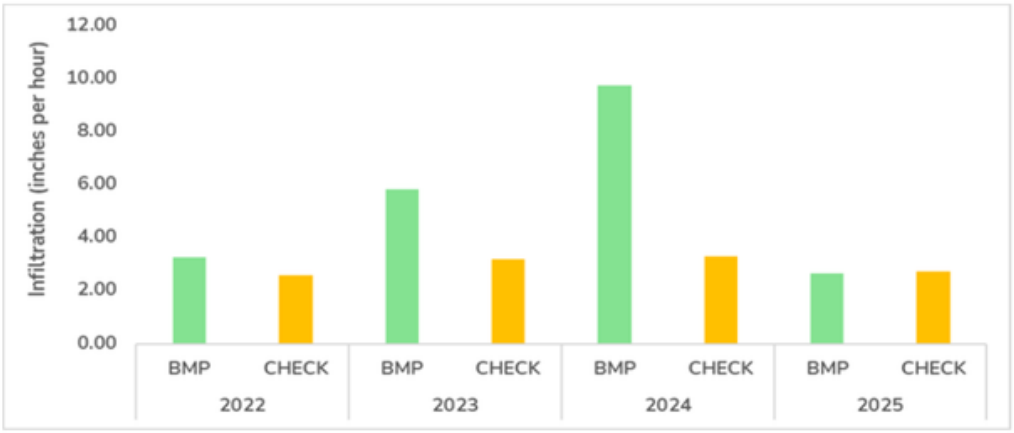

Figure 4. Yearly soil infiltration rates under the BMP and CHECK from site F5

Key Notes:

- The BMP field infiltrated more water than the Check field across all years.
- There is an increasing trend of infiltration in the BMP field, except in 2025, when it declined.
- The Check field has relatively maintained its lowest infiltration rate since the inception of the project.

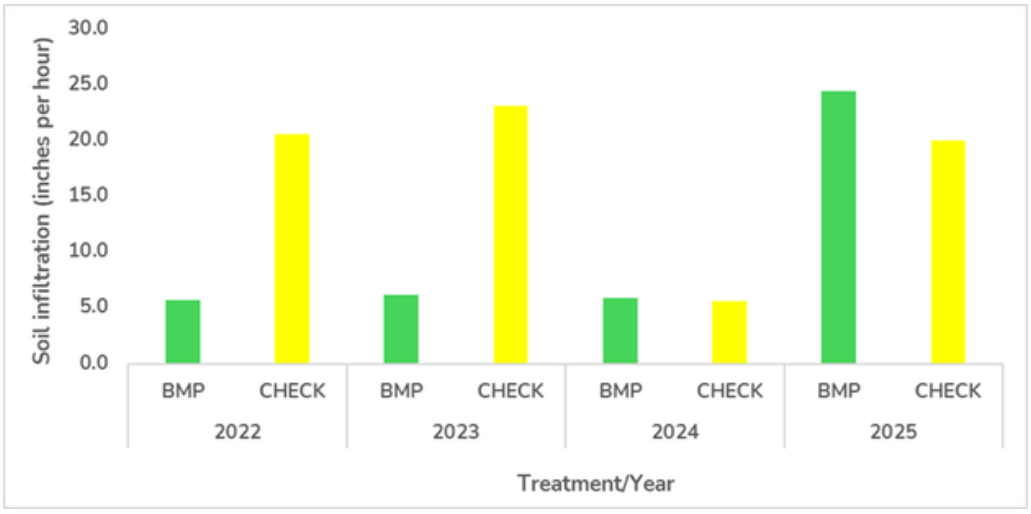

Figure 5. Yearly soil infiltration rates between BMP and CHECK under site F6

Key Notes:

- During the first two years (2022 & 2023), the Check field infiltrated more water, while the BMP field improved in 2025.
- Infiltration rates under the Check field varied between 5.7 and 23 inches per hour, with the highest recorded in 2023.
- The BMP field recorded an increase only in 2024, up to 24 inches per hour. Overall, the infiltration rate under the BMP in other years was between 5.8 and 6.2 inches per hour.
- The trend showed that the infiltration rate has been relatively maintained under the Check, while an improvement was noticed under the BMP field.

Volumetric Water Content (VWC)

Table 2. Volumetric water content (%) captured under site F5

Year	BMP	CHECK
2022	5.6	3.7
2023	11.9	8.7
2024	6.2	6.9
2025	3.3	16.9

Key Notes:

- Soil moisture in the BMP field has been consistently higher than in the Check field except in 2025.
- At both sites, the highest moisture was recorded in 2023 and 2025 for the BMP and Check fields, respectively.

Table 3. Soil moisture (volumetric water content-%) captured under site F6

Year	BMP	CHECK
	%	
2022	11.5	14.0
2023	12.8	15.3
2024	5.2	5.5
2025	12.5	8.7

Key Notes:

- The Check field sustained more moisture than the BMP during the period (2022 – 2024), but recorded the lowest in 2025.
- The above observation correlates with the rate of infiltration. Thus, more water infiltration indicates improved soil moisture within the soil.

Future Expectations

As the Peace Region Living Lab project enters its final year (2026) of data collection, we eagerly anticipate uncovering new insights and refining best management practices that promote sustainable agriculture. The ongoing collaboration with producers will continue to provide valuable data on soil health, crop productivity, and environmental benefits. These findings will not only help address current challenges but also pave the way for innovative solutions tailored to the unique conditions of the Peace Region.

We look forward to sharing more data, success stories, learning from challenges, and demonstrating how sustainable practices can enhance profitability and resilience for producers. Together, we are building a stronger foundation for the future of agriculture. Stay tuned for the exciting developments ahead!