



CAPTURING CARBON AND RETURNS WITH CANADIAN FARMLAND INVESTMENT MANDATES

ABSTRACT:

Farmland investment portfolios which are operated on a zero till basis allow investors to take advantage of carbon sequestering features. In this fashion investors can usefully make farmland allocations to assist with internal carbon neutrality goals while also capturing unique investment qualities such as high Sharpe ratios, consistent non-volatile returns, correlation and diversification benefits and in western Canada a strong value driver in the form of discounted productivity adjusted land prices.

KEYWORDS:

Zero-till, zero-till, direct seeding, conservation agriculture, carbon capture, carbon sequestering, farmland investments, Veripath, open-ended fund, sale-lease-back, land-unit exchange, productivity adjusted land prices, Sharpe ratio, water retention, erosion, fuel consumption, model farmland portfolio

INTRODUCTION:

As a growing number of investors move to ESG driven mandates there is a pressing requirement to find assets and strategies which contribute to ESG compliance while still providing suitable risk adjusted return prospects. One such strategy to consider is Canadian farmland, where zero-till farming is a common practice. Zero-till involves eliminating all or many tillage operations, and placing seed, fertilizer, or manure with minimal soil disturbance. There are several features of zero-till that contribute to ESG, including:

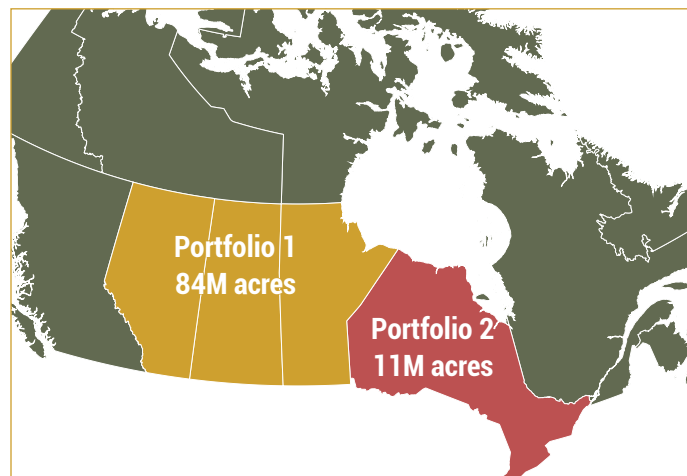
- **Reduced Fuel Consumption:** The practice of zero-till has been shown to require less than a third of the fuel per acre of conventional tillage.
- **Reduced Erosion:** By leaving crop residue on the soil's surface during the periods in which no crops are growing, it is possible to reduce erosion. As a result, zero-till is believed to have 10-20 times less erosion than conventional tillage.
- **Improved Water Retention:** Crop stubble and residue allows water from rainfall and snow melt to penetrate the soil better, instead of evaporating at the surface.
- **Reduced Compaction:** Farm equipment is heavy and by reducing the amount of equipment and passes, soil compaction is significantly reduced.
- **Carbon Sequestration:** Research has shown that zero-till farming practices have contributed to increasing the carbon sequestration of Prairie farmland by 400% since the mid-1990s. Research shows prairie farms are now storing more carbon than they emit and that Canadian cropland can sequester as much as 22 million tonnes of atmospheric carbon dioxide per year by using best management practices such as zero tillage.

CARBON BENEFITS:

The purpose here is to focus on the magnitude of the last feature of zero-till – the carbon sequestering potential. To pursue this line of analysis, Veripath created two theoretical Canadian farmland portfolios based on average land prices, zero-till update rates, carbon sequestering capability of average acre to

allow potential investors to quantify potential carbon sequestering rates implicit in their farmland investments:

- Portfolio 1: 100,000 acres - 100% AB, SK & MB
- Portfolio 2: 100,000 acres - 80% ON, 20% AB, SK & MB



We then used some high-level assumptions to estimate the carbon sequestered per each \$10 million invested based on the following assumptions:

- 70% of AB/SK/MB portfolio acres are zero-till
- 25% of ON portfolio acres are zero till
- \$2k per acre in AB/SK/MB
- \$8k per acre in ON
- 0.33 tonnes carbon per acre sequestered by zero till on average

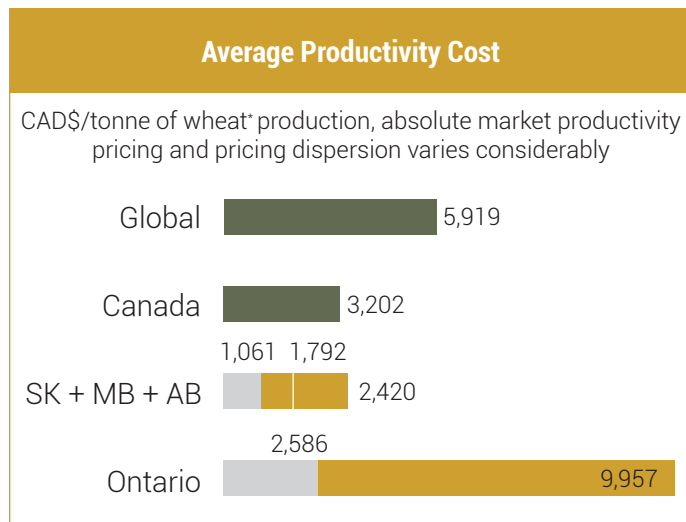
The results were as follows:

- Portfolio 1 – ~1,200 tonnes – equivalent to 260 passenger vehicles per year
- Portfolio 2 – ~140 tonnes – equivalent to 30 passenger vehicles per year

PRODUCTIVITY ADJUSTED PRICING BENEFITS:

Along with a potential carbon rationale for Canadian farmland investments the underlying investment return driver is valuation. The Veripath productivity ad-

justed pricing concept takes the absolute land price/acre divides it by the annual productive capacity in tonnes of hard red spring wheat ("HRS"). The result is the productivity adjusted price of the land - normalised to the price per tonne of HRS capacity. Productivity adjusted pricing analysis allows a more standardised comparison across various row-crop markets. When it is applied to the Canadian market it becomes clear that the prairies trade at ~60% discount to global averages with modest dispersion while Ontario does not appear to be discounted granted with very wide pricing dispersion.



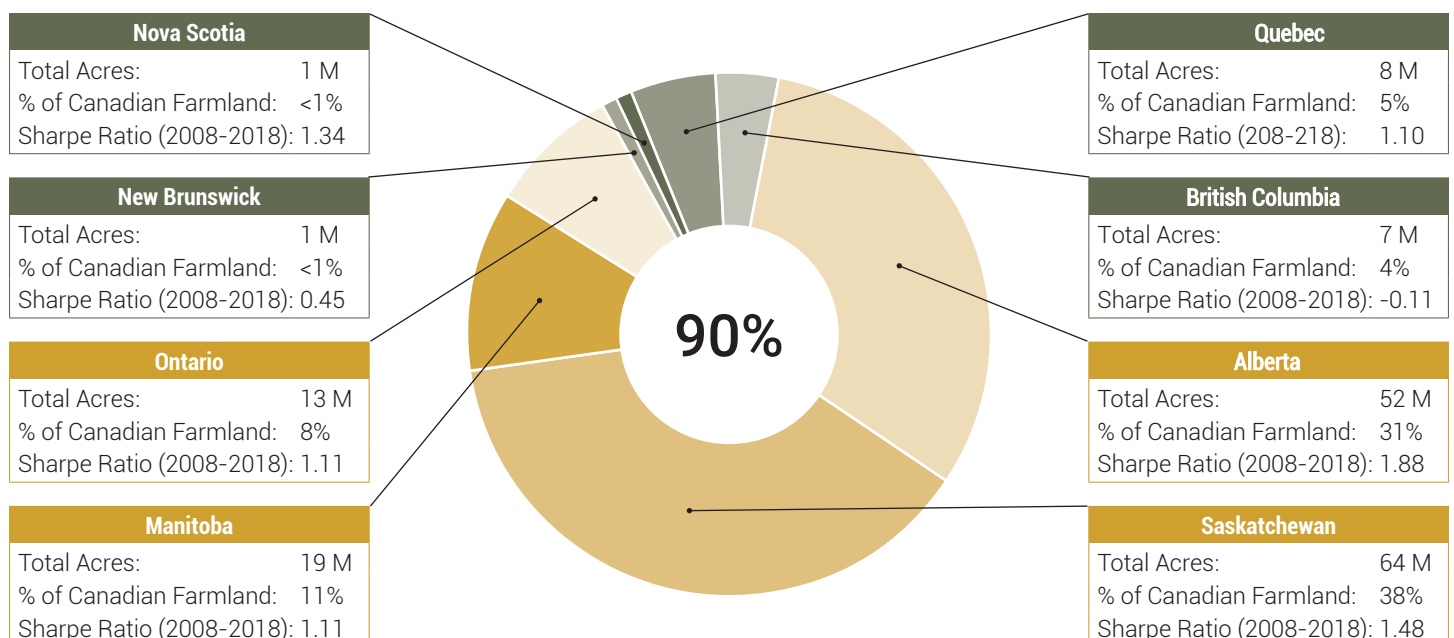
It is also important to note that the prairies represent ~80% of all Canada's farmland and Ontario less than 10% of Canada's farmland.

Comparing the two portfolios above on productivity adjusted pricing, Portfolio 1 far better captures the productivity adjusted price discount present in Canada based on provincial averages:

- Portfolio 1 – productivity adjusted price per tonne of wheat capacity – ~60% aggregate average discount to global price
- Portfolio 2 – productivity adjusted price per tonne of wheat capacity – ~12% aggregate average discount to global price

CONCLUSION:

Each dollar invested in a 100% Canadian prairie portfolio (AB, SK & MB) would sequester approx. **10 times** as much carbon as each dollar invested in a portfolio with an 80% skew to non-prairie farmland (ON). In addition, the prairie portfolio would capture **5 times** as much of the productivity adjusted pricing discount present in the Canadian market that the non-prairie portfolio.



NOTES & SOURCES:

- 1) <https://notillagriculture.com/zero-tillage-farming/> <https://www.agr.gc.ca/eng/agriculture-and-theenvironment/agricultural-practices/soil-and-land/soil-management/flexibility-of-no-till-and-reducedtill-systems-ensures-success-in-the-longterm/?id=1219778199286>
- 2) <https://cwf.ca/research/publications/what-nowsustainable-canadian-agriculture-canadas-solutionfor-a-global-problem/>
- 3) Soil Conservation Council of Canada - www.soilcc.ca/ggmp_feature_articles/2004/2004-02.php
- 4) Prairie Soil Carbon Balance Project (3-year study) *"direct seeded crops take more carbon dioxide out of the atmosphere and have more carbon to store,"* than conventionally tilled crop land. Researchers also observed a slight increase in crop yields. The project found direct seeding in drier open prairie captured about 0.33 tonnes acre carbon per year
- 5) Ontario productivity adjusted pricing - average productivity pricing does not appear to be competitive with global averages and therefore only a very small subset of the market is likely to be investable for a value-oriented fund such as Veripath.
- 6) Productivity adjusted pricing - Hard Red Spring Wheat, Average acre weighted productivity cost for the three provinces, Savills, FCC, 2017 productivity data from Ontario Ministry of Agriculture, Manitoba Ministry of Agriculture, Alberta Agriculture and Forestry, Saskatchewan Ministry of Agriculture). Agriculture as an Asset Class, Veripath analytics – USD/CAD 1.3632 (December 2018)
- 7) Provincial acre data and Sharpe ratios analysis - Statistics Canada, FCC, Veripath analytics – Risk Free Rate = 3%
- 8) Greenhouse Gas Emissions for Typical Passenger Vehicle – 4.6 tonnes US EPA

WHO IS VERIPATH

Veripath is a Canadian alternative investment firm. Members of Veripath's management team have decades of farmland, private equity, and private credit investment experience. Veripath implements its farmland strategy in a way that seeks to preserve as far as possible farmland's low-volatility return profile – the attribute that generates a material portion of Canadian farmland's superior risk adjusted returns. Veripath does this by seeking to minimize operational, weather, geographic and business-related risks – and capture the pure return from land appreciation. Veripath. Veripath uses a unique split fund, evergreen structure which opens the Canadian farmland thesis to the largest possible universe of investors and for the first time makes compliance with the various provincial farmland ownership regulations simple and straightforward. Canadian farmland allocations have several compelling characteristics that make them a worthwhile portfolio allocation for both institutional and retail investors and Veripath's structures are available to both. For more information on Veripath please feel free to register online at www.veripathfarmland.com or call 587-390-8267.



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