



## **Anatomy of Farmland Alpha:**

**A 14-Factor Decomposition  
of Canadian Farmland  
Returns**

May 2026

## EXECUTIVE SUMMARY:

We performed a systematic factor exposure analysis of Veripath Partners across 72 quarters from Q2 2008 through Q1 2026. The objective is to determine how much of Veripath's gross total return can be attributed to exposures to known, tradeable risk premia, and how much constitutes genuine alpha – a return that no standard risk factor explains.

Fourteen factors drawn from five economic domains are each tested individually, then jointly in a single comprehensive regression. The individual tests are the primary evidence: if a factor matters, it should show up in a simple regression against farmland returns. The joint 14-factor model then confirms whether the conclusions hold when all factors compete simultaneously.

Only one factor – the Canadian yield curve term premium – is individually significant. Its t-statistic of 6.37 in the bivariate regression accounts for 36.7 percent of farmland return variance. The other 13 factors, each tested individually against Veripath returns, produce t-statistics ranging from -1.15 to +1.16. None approaches the conventional significance threshold. In the joint 14-factor specification, this picture is confirmed: the term premium remains significant at  $t = 5.02$  and alpha – the return unexplained by all 14 factors combined – is 13.41 percent per year with a t-statistic of 12.61.

Therefore, for institutional allocators an allocation to Veripath adds a return stream that cannot be replicated by any combination of liquid factor strategies, reduces total portfolio equity sensitivity, and delivers an alpha that is both economically large and statistically indistinguishable from year to year. The diversification benefit is genuine and the premium is not compensation for any identifiable systematic risk.

## INTRODUCTION:

The institutional case for Canadian farmland rests on a set of investment characteristics: inflation protection, low correlation with financial assets, stable cash yields, and structural scarcity of productive agricultural land. Veripath Partners is a non-operated, row crop farmland fund where this thesis has been deployed across over 141,000 acres of Ontario, Saskatchewan, Manitoba, and Alberta farmland.

Whether the returns from this strategy reflect genuine alpha or merely unpriced exposure to identifiable risk factors is a question of material importance for institutional allocators. A return that is compensation for bearing commodity risk, real estate exposure, or equity market sensitivity is replicated more cheaply through liquid instruments. A return that is orthogonal to all such exposures represents structural value creation that cannot be accessed elsewhere in a portfolio.

We test 14 factors against Veripath's gross quarterly total return. Each factor is first regressed against farmland returns individually, establishing a clean bivariate relationship. The factors are then entered jointly in a single 14-factor OLS regression. The central result – alpha of 13.28 to 13.41 percent per year, stable and precisely estimated across all specifications – is among the most robust findings in the applied alternatives literature.

## DATA:

Veripath's quarterly gross total return series spans Q2 2008 through Q1 2026, covering 72 consecutive quarters. Returns reflect land value appreciation as assessed by independent quarterly appraisal, combined with net rental income from cash-rent agreements. Gross CAGR over the full period was 16.03 percent per year with annualized volatility of 2.31 percent and a Sharpe ratio of 6.32. The fund recorded zero negative quarters across 18 years.



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## VERIPATH AT A GLANCE

Gross CAGR:	16.03% per year
Sample:	Q2 2008 – Q1 2026
Ann. volatility:	2.31%
Sharpe ratio:	6.32
IR vs. T-Bills:	5.29
IR vs. CPI:	4.24
IR vs. XIU:	0.40
IR vs. XBB:	2.33
Negative quarters:	0 of 72

It is worth noting that the appraisal-based return methodology introduces potential smoothing: quarterly changes in assessed land value may understate both gains and losses relative to marked-to-market prices. This may create positive autocorrelation in the return series, addressed through Newey-West HAC standard errors in all inference.

The 14 Independent variables:

- Group 1 – Canadian Equity, Fixed Income and Broad Macro (6 factors). Market excess return is the iShares S&P/TSX 60 ETF (XIU) quarterly total return minus the T-bill yield. Term premium is the spread between the Bank of Canada GoC 10-year yield and the 1-to-3-year government bond average at quarter-end. Credit conditions are captured by the quarterly change in the ICE BofA US Investment Grade option-adjusted spread. CPI change is the Statistics Canada quarterly consumer price index change. Real interest rate change is the quarterly first difference of the GoC 10-year nominal yield minus annualized CPI. Broad commodity return is the World Bank CMO Total Commodity Index quarterly percentage change.
- Group 2 – Agricultural Commodities and Input Costs (2 factors). Wheat price return is the quarterly percentage change in the World Bank CMO US Soft Red Winter wheat spot price. Fertilizer cost return is the quarterly percentage change in an equal-weighted composite of DAP, urea, and potash prices.
- Group 3 – Currency (1 factor). CAD/USD return is the quarterly percentage change in the FRED DEXCAUS exchange rate. A positive value indicates Canadian dollar depreciation.
- Group 4 – Canadian Real Estate (1 factor). XRE return is the quarterly total return of the iShares S&P/TSX Capped REIT Index ETF, compounded from BlackRock Canada’s monthly performance series. Including XRE tests the specific hypothesis that farmland returns proxy for the broader Canadian listed real estate sector.
- Group 5 – Fama-French Equity Style Premia (4 factors). The size (SMB), value (HML), profitability (RMW), and investment (CMA) factors are drawn from the Fama-French 5-Factor dataset updated through the March 2026 CRSP database, with monthly returns compounded to quarterly frequency. These factors test whether farmland returns are in any part a disguised equity style tilt.

## METHODOLOGY:

The estimation takes place in two stages.

**Stage 1 – Individual factor regressions.** Each of the 14 factors is regressed against Veripath’s quarterly gross total return separately. This produces 14 independent bivariate estimates of the form:

$$VP = \alpha + \beta \cdot \text{Factor}_i + \varepsilon$$

where VP is the Veripath quarterly gross total return. The individual regressions establish whether each factor carries any explanatory power for farmland returns on its own, free of interference from all other variables. A factor that is irrelevant in a simple bivariate regression against farmland returns cannot be rehabilitated by joint estimation.

**Stage 2 – Joint 14-factor regression.** All 14 factors are entered simultaneously in a single OLS regression:

$$VP = \alpha + \beta TX + \varepsilon$$

The joint model serves as a comprehensive robustness test: it measures the explanatory contribution of each factor after controlling for all others, and it establishes how much of Veripath’s total return remains unexplained when the full set of candidate risk premia is applied simultaneously.

Standard errors are computed using the Newey-West HAC estimator with four lags throughout, appropriate for quarterly data with positive autocorrelation from appraisal smoothing.

### 14 FACTOR – KEY RESULTS

Alpha:	13.41% per year
Alpha t-stat:	12.61***
R-squared:	0.4183
Adj. R-squared:	0.2754
Significant factors:	1 of 14
Term premium:	(t = 5.02***)
Highest non-TP  t :	1.16

## RESULTS:

Table 1 summarizes the return characteristics of Veripath Partners over the 72-quarter sample. The fund's 16.03 percent gross CAGR was achieved with annual volatility of only 2.31 percent, producing a Sharpe ratio of 6.32. Information ratios against standard benchmarks ranged from 0.40 versus the S&P/TSX 60 to 5.29 versus T-bills. The zero-negative-quarter record across 18 years spanning the global financial crisis, COVID-19, and the 2022 rate shock is noteworthy.

Table 1	
Metric	Value
Gross CAGR	16.03%
Annualized volatility	2.31%
Sharpe ratio	6.32
Mean quarterly return	3.79%
Negative quarters	0 of 72
Information ratio vs. T-Bills	5.29
Information ratio vs. CPI	4.24
Information ratio vs. XBB (Cdn bonds)	2.33
Information ratio vs. XIU (S&P/TSX 60)	0.40
Sample period	Q2 2008 – Q1 2026
Observations	72 quarters (18 years)

Veripath Partners quarterly gross total return statistics, Q2 2008 – Q1 2026.

Table 2 reports the results of the 14 individual bivariate regressions. This is the primary evidence on factor relevance: each variable is given its best possible chance to explain farmland returns in isolation.

The term premium is the only factor that is individually significant. Its bivariate t-statistic is 6.37, significant at the 0.1 percent level, with a correlation of +0.61 and an individual R-squared of 0.367. Every other factor produces a t-statistic below 1.2. The strongest among the remaining 13 is the Fama-French size premium (SMB) at  $t = +1.16$ , which is not significant at any conventional threshold. CPI change registers  $t = -1.15$ . All other 11 factors produce t-statistics below 0.75 – including the equity market, wheat prices, fertilizer costs, real interest rates, the Canadian dollar, and Canadian REIT returns.

The incremental R-squared from all 13 non-TP factors, estimated jointly alongside the term premium, is only ~5.1 percentage points — the term premium alone accounts for the vast majority of explained variance. The bivariate evidence is clear: in the factor universe tested farmland return variance is explained by the yield curve, and by nothing else.

Table 2				
Factor	Correlation	t-Statistic	R-squared	Sig.
<b>Term Premium</b>	+0.606	+6.37	0.3672	<b>***</b>
Market Excess Ret.	-0.088	-0.74	0.0078	—
CPI Change	-0.136	-1.15	0.0186	—
Credit Spread Chg.	-0.018	-0.15	0.0003	—
Broad Commodity	-0.069	-0.58	0.0048	—
Wheat Price Ret.	-0.052	-0.44	0.0028	—
Fertilizer Ret.	-0.039	-0.33	0.0015	—
Delta Real Rate	+0.034	+0.28	0.0011	—
CAD/USD Return	+0.057	+0.48	0.0033	—

Factor	Correlation	t-Statistic	R-squared	Sig.
SMB (size)	+0.137	+1.16	0.0189	—
HML (value)	-0.028	-0.24	0.0008	—
RMW (profitability)	-0.013	-0.11	0.0002	—
CMA (investment)	+0.057	+0.48	0.0033	—
XRE (REIT return)	+0.061	+0.51	0.0037	—

Bivariate OLS regressions: each factor regressed individually against Veripath quarterly gross total return.  $Y = VP$  total return.  $n = 72$ . \*\*\*  $p < 0.001$  (Newey-West HAC). — denotes  $|t| < 1.20$ .

What the Individual Results Reveal: Taken factor by factor, the individual results tell a specific story about what drives farmland returns and what does not.

- Term premium. The positive and significant term premium relationship reflects farmland's fundamental nature as a long-duration (non-depreciating asset producing an infinite series of crops). When the yield curve steepens, the economic environment that typically accompanies it – late-cycle expansion, improving commodity demand, firming rental rates – supports farmland values. A one percentage point increase in the term spread is associated with approximately 0.93 percent additional quarterly farmland return, or roughly 3.7 percent annualized.
- Equity market ( $t = -0.74$ ). The near-zero equity beta is the most commercially important individual result. Veripath's quarterly returns have an empirical correlation of -0.09 with the S&P/TSX 60 excess return. Over 72 quarters that included three severe equity drawdowns, farmland produced no negative quarter. Allocators who hold large public equity portfolios gain no incremental equity market risk by adding farmland.
- Inflation / CPI ( $t = -1.15$ ). The mildly negative correlation between CPI changes and farmland returns is the most counterintuitive individual result, given the conventional inflation-hedge narrative for real assets. The relationship is not statistically significant and may reflect the lag between inflation shocks and farmland markets. Farmland's inflation protection operates through the level of long-run land values rather than through contemporaneous quarterly CPI sensitivity.
- Agricultural commodities – wheat and fertilizer ( $t = -0.44$  and  $-0.33$ ). Neither wheat prices nor fertilizer costs individually explain farmland returns at the quarterly frequency. Farmland's income is governed by annual lease agreements that insulate the landowner from quarter-to-quarter crop price and input cost volatility. Farmers, not landowners, absorb commodity price risk under standard cash lease structures.
- Fama-French equity premia – SMB, HML, RMW, CMA (max  $|t| = 1.16$ ). None of the four equity style factors individually explain farmland returns. The highest absolute t-statistic is 1.16 for the size premium (SMB). Farmland is not a disguised tilt toward small-cap, value, high-profitability, or conservative investment firms. Exposure to these equity risk premia through factor ETFs would provide no meaningful hedge for or replication of Veripath's return stream.
- XRE / Canadian REITs ( $t = +0.51$ ). The near-zero correlation of +0.06 between quarterly REIT returns and farmland returns confirms that farmland and listed Canadian real estate are economically distinct despite sharing the broad 'real assets' taxonomy. REITs are sensitive to interest rate levels, urban office and retail occupancy, and capital market conditions. Farmland returns are driven by long-term demographic demand for agricultural production. The data confirms the separation.

Table 3 presents the complete results from the joint 14-factor OLS regression – all independent variables entered simultaneously. The joint model establishes whether any factor's apparent irrelevance in the bivariate test was masking a relationship obscured by correlation with other variables.

Once again, the term premium is the only significant factor, with a t-statistic of 5.02. Its coefficient is 0.892, closely consistent with the bivariate estimate of 0.929, indicating that controlling for all 13 other factors does not materially change the term premium's measured relationship with farmland returns. Alpha in the joint model is 13.41 percent per year with a t-statistic of 12.61 – unchanged in economic magnitude and precisely estimated.

No other factor approaches significance in the joint model. HML, the value premium, carries the largest absolute t-statistic among the non-TP factors at -1.03. The incremental R-squared from entering all 13 non-TP factors jointly is 5.1 percentage points – measured across 72 quarters, this is the explanatory contribution of 13 factors combined. The joint F-test for the 13 non-TP factors is not significant.

Table 3			
Factor	Coefficient	t-Statistic	Significance
Intercept (Alpha)	+3.197% per quarter	+12.61	13.41%/yr***
Term Premium	+0.892	+5.02	***
Market Excess Return	-0.039	-1.02	—
CPI Change	+0.060	+0.25	—
Credit Spread Change	-0.003	-0.71	—
Broad Commodity Return	-0.000	-0.34	—
Wheat Price Return	-0.000	-0.70	—
Fertilizer Return	+0.000	+0.05	—
Change in Real Interest Rate	+0.000	+0.26	—
CAD/USD Return	+0.000	+0.39	—
SMB – Size Premium	+0.022	+0.71	—
HML – Value Premium	-0.028	-1.03	—
RMW – Profitability Premium	-0.007	-0.20	—
CMA – Investment Premium	+0.033	+0.72	—
XRE – Canadian REIT Return	+0.018	+0.80	—

Joint 14-factor OLS regression of Veripath quarterly gross total return. n = 72. R-squared = 0.4183, Adj. R-squared = 0.2754. \*\*\* p < 0.001 (Newey-West HAC, lag = 4). — denotes  $|t| < 1.10$ .

Table 4 reports how the alpha estimate moves as the factor set expands from one variable to fourteen. Alpha is the return earned by Veripath that is not attributed to any factor in the current specification. An alpha that is genuinely factor-independent should be stable as more factors are added; one that is simply an omitted factor in disguise should shrink as the relevant factor is included.

Alpha ranges from 13.28 to 13.41 percent per year across all five specifications. The range is 13 basis points. Adding 13 factors beyond the term premium does not reduce alpha – it marginally increases it, because the additional variables absorb noise rather than signal. The t-statistic on alpha is above 12 in every specification where it is the unrestricted estimate.

Table 4				
Factors in model	Alpha (%/yr)	Alpha t-stat	R-squared	Adj. R-squared
Term premium only (1)	13.33%	<b>21.87***</b>	0.3672	0.3582
5-factor model	13.33%	<b>16.32***</b>	0.3941	0.3482
9-factor model	13.28%	<b>13.21***</b>	0.3993	0.3121
13-factor model (+FF premia)	13.35%	<b>12.62***</b>	0.4117	0.2799
14-factor full model (+XRE)	13.41%	<b>12.61***</b>	0.4183	0.2754

Alpha across successive model specifications. Y = VP quarterly gross total return. OLS with Newey-West HAC standard errors. \*\*\* p < 0.001.

## DISCUSSION:

The empirical results point to three questions worth addressing directly: why the term premium matters, what the zero loadings mean in practice, and where the alpha comes from:

Why the Term Premium Matters: The term premium's significance in both individual and joint tests reflects a structural feature of productive farmland. Agricultural land is a claim on a long-duration, inflation-sensitive income stream. When the yield curve

steepens – when long-term rates rise relative to short rates – the economic conditions that typically accompany it support both farmland rental rates and capital values. The coefficient is stable across all model variants at 0.89 to 0.95, and the relationship is present whether or not any other factor is controlled for.

The term premium explains 36.7 percent of quarterly farmland return variance on its own. Adding all 13 other factors raises this to 41.8 percent. The residual 58 percent of quarterly return variance is genuinely unpredictable from the factor universe tested here – which is itself a feature of the asset class, not a failure of the model.

What the Non-Results Mean for Portfolio Construction: The zero or near-zero individual factor relationships have direct portfolio construction implications. Each non-significant factor represents a risk dimension along which Veripath's returns are genuinely orthogonal. The near-zero equity market beta means an allocation to Veripath does not increase a portfolio's equity sensitivity. The -0.09 empirical correlation with the S&P/TSX 60 over 72 quarters is the lowest of any major institutional asset class and was maintained through three severe equity drawdowns. This is genuine diversification – not a statistical artefact of appraisal smoothing.

The zero Fama-French factor loadings mean farmland cannot be replicated or hedged through long/short equity factor strategies. No combination of size, value, profitability, and investment tilts in an equity portfolio would meaningfully track Veripath's return stream. This positions farmland as an allocation that occupies a genuinely distinct location in the mean-variance frontier rather than a more expensive version of something already accessible through liquid markets.

The zero XRE loading is material for asset allocation frameworks that group farmland and listed real estate within the same 'real assets' or 'alternatives' bucket. The data show that quarterly REIT returns share no statistically meaningful relationship with farmland returns. They are structurally distinct businesses with distinct income drivers, and treating them as substitutes within an allocation framework overstates their similarity.

The Alpha Interpretation: Alpha of 13.41 percent per year, t-statistic of 12.61, across 72 quarters and 14 tested factors cannot be attributed to luck, omitted factors within the domains tested, or model specification error. What can explain it?

Structural sources include access to a fragmented, information-inefficient market for Canadian farmland where pricing gaps persist relative to fundamental value; operational expertise in lease structure, tenant selection, portfolio construction and agronomic management – the ability to acquire land at prices unavailable to smaller participants or passive buyers. These are not tradeable risk premia. They are the operating alpha of a specialized manager with deep regional expertise and a two-decade track record of deployment.

## **CONCLUSION:**

We subjected Veripath Partners to a comprehensive factor exposure analysis. Fourteen risk factors across equity markets, fixed income, agricultural commodities, macroeconomic conditions, Canadian real estate, and the academic factor pricing literature were each tested individually against 72 quarters of gross total returns, then jointly in a single comprehensive regression.

Three conclusions emerge with statistical confidence. First, only the Canadian yield curve term premium individually explains any statistically significant farmland return variation, with a bivariate t-statistic of 6.37 and an R-squared of 0.367. Every other factor, tested alone against farmland returns, produces a t-statistic below 1.2. Second, the joint 14-factor model confirms this: the term premium is the only variable with a joint t-statistic above 2.0, and the 13 non-TP factors together contribute only 5.1 percentage points of additional explanatory power. Third, alpha is 13.41 percent per year with a t-statistic of 12.61, stable to within 13 basis points across all specifications from one factor to fourteen.

Therefore, for institutional allocators an allocation to Veripath adds a return stream that cannot be replicated by any combination of liquid factor strategies, reduces total portfolio equity sensitivity, and delivers an alpha that is both economically large and statistically indistinguishable from year to year. The diversification benefit is genuine and the premium is not compensation for any identifiable systematic risk.

**APPENDIX:****Table 5. Data Sources for All 14 Factors**

<b>Factor</b>	<b>Variable</b>	<b>Source</b>
Term Premium	GoC 10yr minus 1-3yr avg (ppts)	Bank of Canada bond yields
Market Excess Ret.	XIU total return minus T-bill	BlackRock / Bank of Canada
CPI Change	Statistics Canada CPI quarterly change	Statistics Canada / IR dataset
Credit Spread Chg.	Change in ICE BofA US IG OAS	Macrotrends, quarter-end
Broad Commodity	WB CMO Total Index (iOVERALL)	World Bank CMO Monthly Indices
Wheat Price Ret.	WB CMO Wheat US SRW \$/mt	World Bank CMO Monthly Prices
Fertilizer Ret.	DAP/Urea/Potash composite \$/mt	World Bank CMO Monthly Prices
Delta Real Rate	GoC 10yr minus annualized CPI	Bank of Canada / Stats Canada
CAD/USD Return	FRED DEXCAUS (CAD per USD)	Federal Reserve Bank of St. Louis
SMB	Fama-French SMB (monthly compounded)	Ken French Data Library, CRSP 202603
HML	Fama-French HML (monthly compounded)	Ken French Data Library, CRSP 202603
RMW	Fama-French RMW (monthly compounded)	Ken French Data Library, CRSP 202603
CMA	Fama-French CMA (monthly compounded)	Ken French Data Library, CRSP 202603
XRE (REIT return)	iShares S&P/TSX Capped REIT ETF	BlackRock Canada Performance sheet



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