



# “Food, Feed & Fuel” - Farmland Investing Explained

Enquira Research



# Investing in Canadian Farmland

Canadian farmland continues to receive favorable attention from alternative investors. We believe it stems from some unique and increasingly sought after characteristics - low volatility, low correlations to traditional asset classes, high correlation to inflation, superior risk adjusted returns, linkage to emerging market growth with limited political risk, reliable cash-flow generation, if structured correctly, minimal counter-party risk and, in Saskatchewan in particular, a margin of safety.

## Low Volatility

Farmland prices exhibit low volatility in general and in particular when compared to listed equities. Canadian farmland prices have experienced less than 1/4 the volatility of the S&P 500 over the last 20 years (see Chart 1).

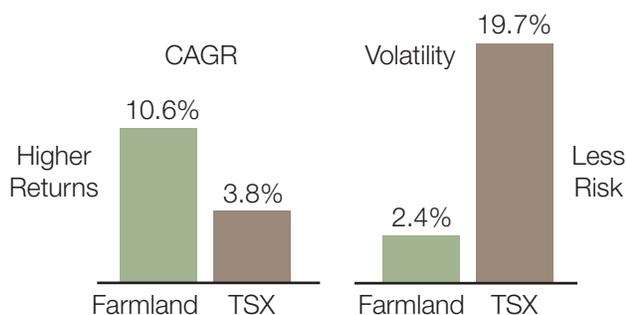
## High Absolute Returns

Farmland typically generates higher absolute returns than listed equities over most measurement periods. The combination of lower volatility with these higher absolute returns leads to one of the most important financial qualities of farmland - high risk-adjusted returns or Sharpe ratios (see Chart 1).

## High Risk Adjusted Returns

Investors in public equities are being asked to accept nominal returns below 6% over long periods but with increasingly high price volatility. Meanwhile, farmland generates higher absolute returns but with lower price volatility. The result is that farmland consistently generates superior risk adjusted returns over public equities - often by a substantial margin. Another way to measure risk-adjusted returns is the Sharpe ratio. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the risk taken. When comparing two assets, in general the asset with the higher Sharpe ratio gives more return for the same risk. Farmland has a higher Sharpe ratio than public equities. Investors are generally advised to pick investments with higher Sharpe ratios and they are beginning to realize that they are not being properly compensated for the risk/volatility of public markets. We believe that farmland is becoming the beneficiary of a secular reduction in listed equity exposure amongst investors. In the face of poor public market Sharpe ratios, investor capital appears to be moving elsewhere, as evidenced by consistent net monthly outflows from mutual funds in the US. A specific example of this can be found from 2000 to 2010 where farmland returns (Alberta, cum rents) outperformed Canadian stocks with less volatility.

Chart 1: Risk versus Return





### Low Correlation to Traditional Asset Classes

Farmland has a low correlation to traditional retail investments - public equities, bonds and real estate. Most of these traditional retail investments are exhibiting high positive cross correlations so it is very difficult for investors to construct diversified portfolios with the mainstream options. So for investors looking for improved diversification, allocations to non-traditional and uncorrelated sectors like farmland continue to grow in appeal.

### Emerging Market Linkage

As emerging markets develop, the consumption of energy and agriculture commodities increases rapidly at the early stages of GDP/capita growth. However, recent events in SinoForest should highlight the difficulty of making direct investments into emerging markets. By way of contrast, direct investments into farmland in developed nations provide linkage to emerging market growth but without political risk or opaque accounting .

### High Correlation to Inflation

While having a low correlation to traditional investments, farmland has a high positive correlation to inflation – this appears to hold true in most jurisdictions where historic pricing data is available. US research shows a correlation of positive 0.54 between US farmland and the Consumer Price Index (“CPI”). Farmland’s correlation to CPI significantly exceeds that of stocks, bonds and non-farm real estate. Farmland shares this correlation attribute with gold, however unlike gold, farmland also produces stable income streams – as a consequence it has been described as “*gold with yield*”. According to the Bank of Canada, Canadian inflation has averaged approximately 4% annually over the last 50 years compared to annual compounded farmland returns of over 10% - producing an annual real return for farmland of over 6%.

### Reliable Cash-flow

By cash renting (i.e. leasing the land to farmers for 100% upfront cash payment rather than operating) an investor in farmland can look forward to reliable cash-flow (on the order of 6-7% gross pa) without operational risk.

### Minimal Counterparty Risk

The recent bankruptcy of MF Global has shown that investors cannot afford to be complacent about counterparties. It is increasingly apparent that many financial intermediaries only appear to be well capitalized because risks, where apparent, are thought to be hedged. Through hedge transactions, intermediaries argue that net exposure, rather than gross, is the key measure for investors to consider. This is not the case and where there is a concentration of risk in critical counter-parties (e.g. AIG), in a world of high positive correlations

across markets and asset classes, hedges can fail leaving catastrophic gross rather than net exposure and therefore bankrupt counter-parties behind. In contrast, an unlevered portfolio of farmland, cash rented with 100% up-front payments, has no counter-party to fail.



## Margin of Safety

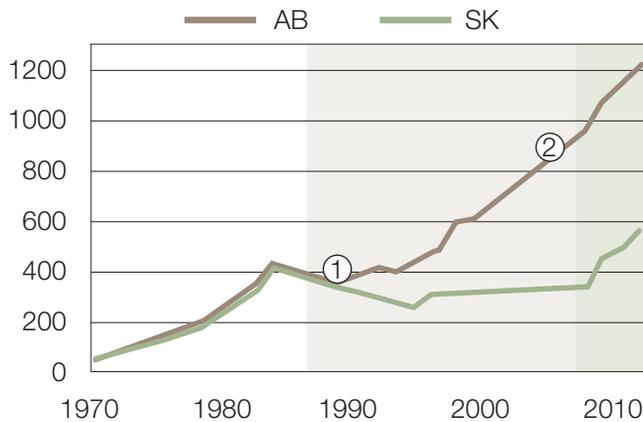
Saskatchewan farmland also trades at a demonstrable discount to global averages that we believe provides a critical margin of safety. Saskatchewan price increases over the 4.5 year period from 2007 to mid-year 2011 (the period over which Saskatchewan farmland prices began to accelerate) go a long way to bearing out the existence of this “margin of safety”:

- Alberta farmland returns (ex rents) - 6.4% per year
- Saskatchewan farmland returns (ex rents) - 11.4% per year

Recent data also seems to support the idea that the Saskatchewan margin of safety returns may be growing. In the first half of 2011, when Alberta farmland increased 4%, Saskatchewan farmland increased 12%. This is not surprising given that Alberta farmland still trades at a significant premium to Saskatchewan land on average (see Charts 2 & 3).

Chart 2: Alberta vs Saskatchewan Farmland Prices (1970 to present)

Average Price Per Acre (CAD\$)

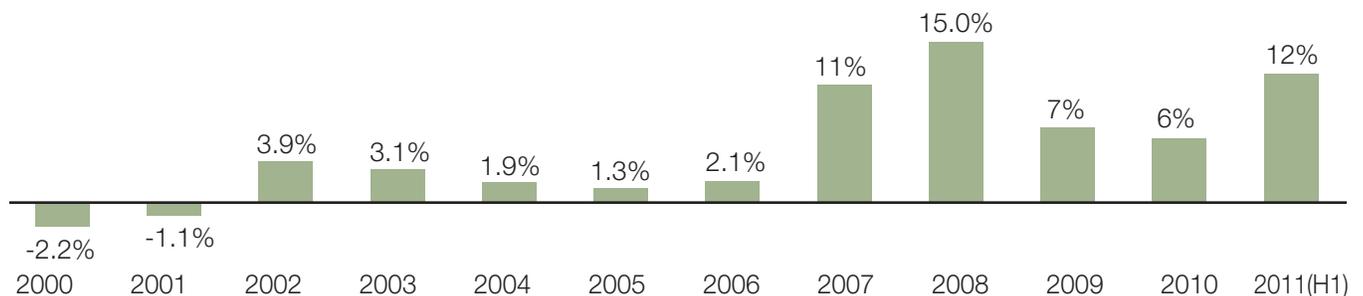


The price disparity between Alberta and Saskatchewan appears to be linked to changes to the farm ownership rules.

- ① 1988 - Saskatchewan passes the Farmland Security Act - Canadians non-resident in Saskatchewan restricted to 320 acres, foreign ownership precluded
- ② 2003 - Saskatchewan harmonizes and allows unlimited ownership by all Canadians

Source: Agcapita Farmland Fund

Chart 3: Saskatchewan annual price changes (except 2011 which is semi-annual)



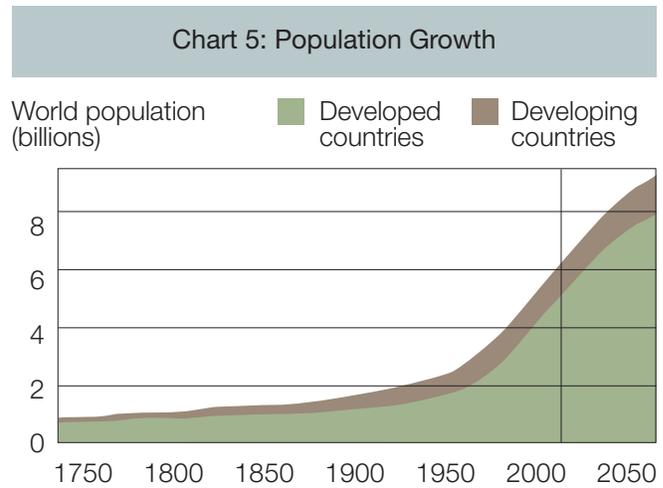
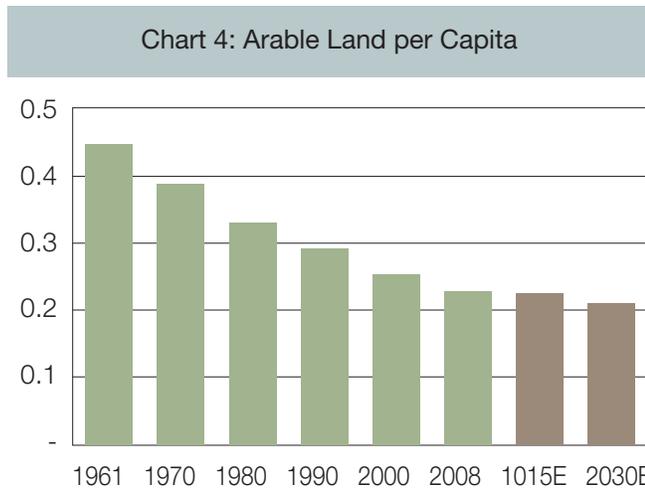
Source: Farm Credit Canada



### Growth Linkage – Food, Feed & Fuel and the Demand Side:

Farmland is also an attractive investment as it provides a way to access the returns from the increase in agricultural commodity prices. These price increases are being driven by the demand for “food, feed & fuel”.

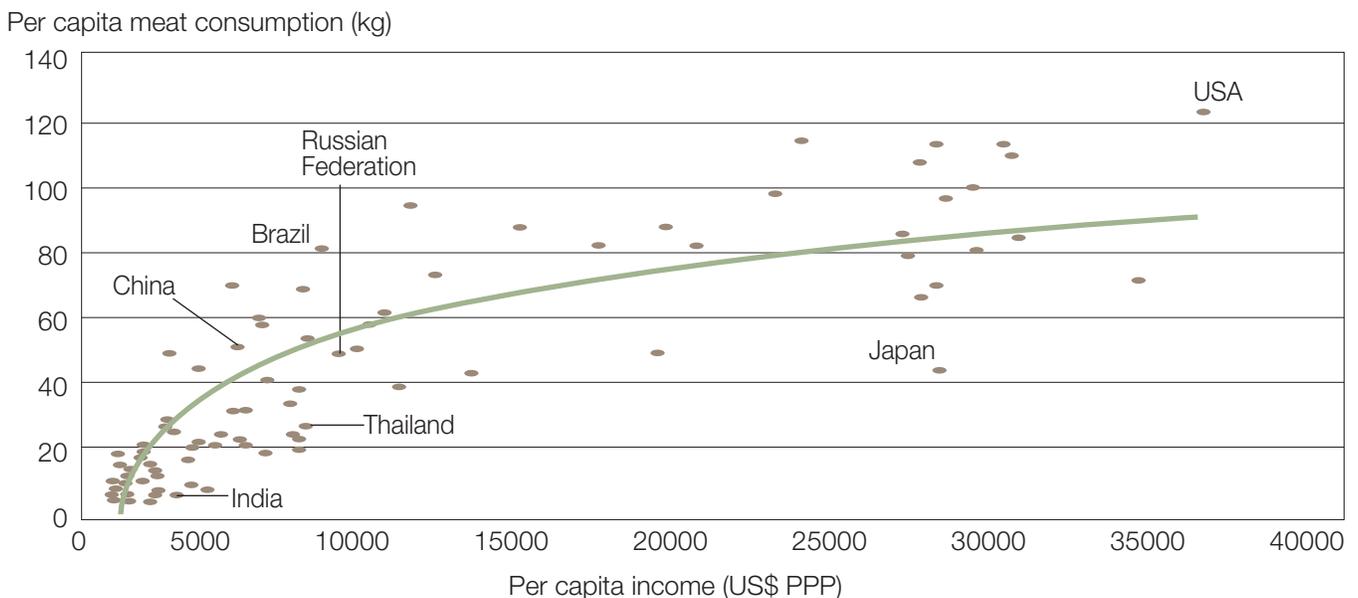
- Food: There is a decreasing amount of arable land worldwide, proportionate to the increasing population (see Charts 4 & 5):



Source: World Bank, Raymond James Ltd.

- Feed: An increasing demand for meat calories (as development occurs and standards of living increase) requires more farmland for production than grain calories. The relationship between income and protein consumption is quite robust and well understood (see Charts 6 & 7):

**Chart 6: The relationship between meat consumption and per capita income**

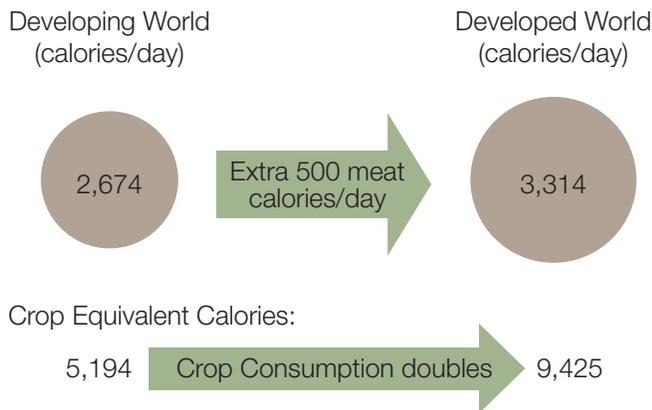


Source: Food and Agriculture Organization 2006; World Bank 2006



It is worth noting that China and India already consume approximately 50% of the world's grain and as they switch to a high meat diet they could double the amount of crops they consume. The protein increase described in Chart 7 holds across most emerging economies and is a trend that has been well underway for many years as consumers add meat to their diets (see Charts 8 & 9):

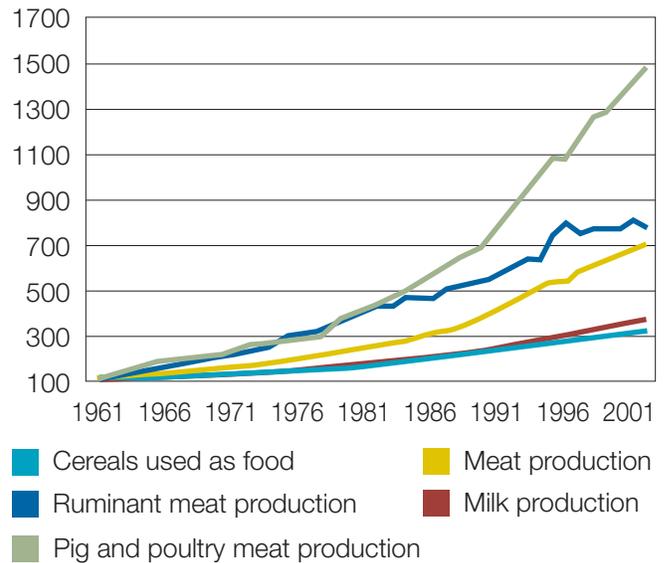
**Chart 7: Developed v Developing Market Diets on Crop Equivalent Basis**



Source: Agcapita Farmland Fund

*“As nearly half of the world’s cereal production is used to produce animal feed, the dietary proportion of meat has a major influence on global food demand. With meat consumption projected to increase from 37.4 kg/person/year in 2000 to over 52 kg/person/year by 2050, cereal requirements for more intensive meat production may increase substantially to more than 50% of total cereal production.”* Food and Agriculture Organization, 2006.

**Chart 8: Developing Countries (per capita meat consumption (kg))**



Source: Food and Agriculture Organization 2006

**Chart 9: Past and projected trends in consumption of meat and milk in developing and developed countries**

Food demand	Developing countries					Developed countries				
	1980	1990	2002	2015	2030	1980	1990	2002	2015	2030
Annual per capita meat consumption (kg)	14	18	28	32	37	73	80	78	83	89
Annual per capita milk consumption (kg)	34	38	46	55	66	195	200	202	203	209
Total meat consumption (million tonnes)	47	73	137	184	252	86	100	102	112	121
Total milk consumption (million tonnes)	114	152	222	323	452	228	251	265	273	284

Source: Food and Agriculture Organization 2006

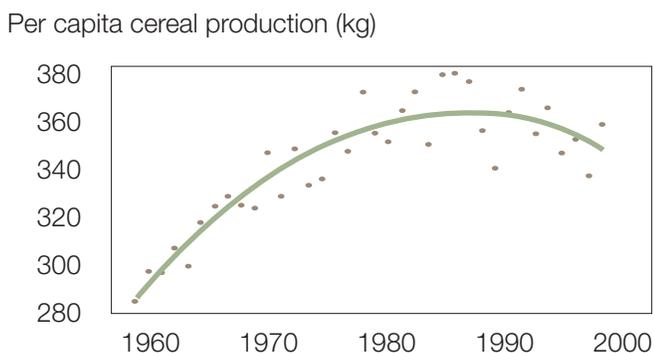


- **Fuel:** A commitment by many countries (including Canada) to increase the use of biofuels, which will need farmland for production. Virtually every major oil consuming nation has set initial biofuel targets that take effect over the next 5 years. According to some estimates, current targets commit approximately 440 million acres to biofuel production, which represents almost 11% of all the arable land in the world (Source: Agcapita).

### Declining Productivity Growth – The Supply Side Problem:

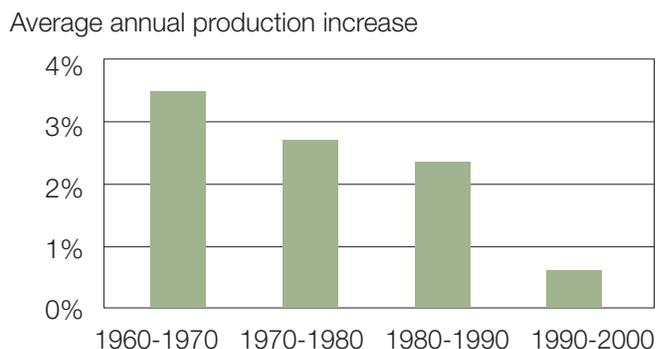
*“Land is scarce and will become scarcer as the world has to double food output to satisfy increased demand by 2050. With limited land and water resources, this will automatically lead to increased valuations of productive land.”*  
 Joachim von Braun, Director General at the International Food Policy Research Institute, 2009

**Chart 10: Long-term trends in average per capita cereal production**



Source: Food and Agriculture Organization 2009; United Nations Population Division 2007

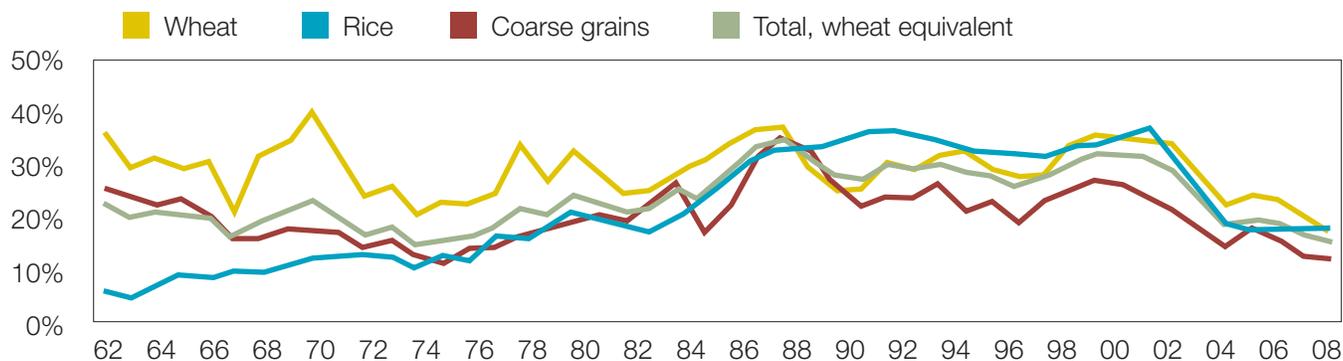
**Chart 11: Average annual production increase during the four decades between 1960 and 2000**



Source: Food and Agriculture Organization 2009

Agriculture is faced with a classic issue of diminishing returns. In simple terms productivity growth has been plateauing for years as it becomes more difficult to increase global food production (see Charts 10 & 11). Most of the obvious improvements have been made in the form of machinery, biotechnology and fertilizer. This challenge can be seen in the reducing marginal return to fertilizer application - a larger amount of fertilizer is required for each unit of yield. In 1960 one tonne of fertilizer produced 80 tonnes of cereals. In 1995 one tonne of fertilizer produced only 20 tonnes of cereals. This supply challenge is clear when inventory levels are analyzed. Global stocks to usage numbers are at historic lows and have been in a general down trend for a decade (see Chart 12):

**Chart 12: Ratio of global grain stocks to usage rates**



Source: US Department of Agriculture Foreign Agricultural Service 2008



Agricultural commodity prices are beginning to reflect this tight inventory position:

**Chart 13: Comparison of OECD-FAO commodity price forecasts for the period 2006-2017 with actual 2008 price peaks (Price units: US\$ / metric ton)**

Commodity	Average Price 1998-2007	Actual Price Rise in 2008		OECD-FAO Forecasts	
		2008 Price Peak	% Increase Over 1998-2007 Average	OECD-FAO Forecast Average Price 2008-2017	% Increase Over 1998-2007 Average
Wheat	153	440	187%	234	53%
Rice	249	1015	307%	343	38%
Corn	107	287	169%	177	66%

Source: OECD and FAO 2008; International Monetary Fund 2009

### Inelastic Demand:

Agriculture has high energy inputs in the form of fuel and fertilizers. Therefore, in a market of rising energy and agricultural commodity prices do farm operating margins increase, remain flat or decrease? This is where the question of the elasticity of demand for food versus energy becomes interesting. Historically food demand has been more inelastic than energy demand. If this relationship were to continue then we would predict that in a secular bull market for commodities, agricultural commodity prices would rise more quickly than energy prices and therefore farm margins should improve.

### How Do Farmland Prices respond to Crop Prices:

We conducted a thought experiment using a similar idea to cap-rates for commercial buildings but applied to farmland and cash rents. In this example we used Saskatchewan farmland and made the following key assumptions:

Starting price/bushel (wheat) of \$9	Crop price increase per year	6%
Starting cash/rent per care \$33	Share of rent increases captured by landlord	15%
Starting price/acre SK land of \$550	Bushels per acre yield (wheat)	40
Starting input cost/acre of \$200	Input cost increases per year	5%

At a cap rate assumption of 6% in this theoretical scenario land prices would increase from \$550/acre to \$1,000/acre in 7 years.

	Year 1	Year 7
Farm Operating Margin (per acre, ex rent):	\$160.00	\$259.89
Cash rent (per acre):	\$33.00	\$60.20
Price/Acre:	\$550.00	\$1,003.27



### Sample Due Diligence Questions for Farmland Funds:

Investment vehicles dedicated to direct holdings of farmland are quite rare worldwide and particularly rare in the Canadian market. Important questions for investors are:

- how does the fund use leverage (if at all);
- RRSP eligibility;
- expected return volatility;
- whether the fund is structured to allow direct, equity investment in key western Canadian markets, and in particular Saskatchewan;
- how does the fund make investment decisions (what is the investment model - is it mathematical and reproducible), and
- what are the principals' track records in managing investors' capital?

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