



Comparing Risk in Agricultural Land Investments – Row Crops vs Permanent Crops

ABSTRACT:

Investing in agricultural land is becoming increasingly popular for those seeking stable returns and portfolio diversification. Among the choices, row crop farmland (e.g. wheat, pulses, corn, soybeans) and permanent crop land (e.g., orchards, vineyards) present distinct investment profiles. This paper explores how we believe investing in row crop farmland carries less risk compared to permanent crop land, based on liquidity, depreciation, capital intensity, weather resilience, water dependency and labor intensity.

INTRODUCTION:

Understanding the inherent difference between row crop farmland and permanent crop land is essential for risk management. Row crop farmland involves planting annual crops, such as grains, while permanent crop land involves perennial crops like fruit trees or grapevines that last for many years.



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Tables 1 & 2: Canadian farmland/permanent crop land breakdown

Farmland: ~160 million acres

(mostly canola, wheat, pulses, barley, and soybeans)

Total investible market size ~\$750 billion:

- Prairie provinces: ~130 million acres
- Ontario and Quebec: ~ 20 million acres
- British Columbia: ~6 million acres
- Atlantic provinces: ~5 million acres

Permanent crop land: ~ 0.5M acres

(mostly fruit trees, vineyards, and blueberries)

Total investible market size ~\$15 billion:

- British Columbia: ~0.15M acres
- Ontario: ~0.15M acres
- Quebec and other regions: ~0.2M acres

Clearly the Canadian farmland/row crop market is much larger (320X greater acres), more investible (50X greater market capitalization) with commensurately greater liquidity than the permanent crop market. The purpose of this paper is to go further and discuss the risk profiles of the two assets classes beyond merely liquidity. This paper compares these two types of land investments across five critical dimensions that impact risk:

- Asset depreciation
- Weather resilience
- Labor intensity
- Capital intensity
- Water dependency

DEPRECIATION:

Permanent crops have a more operational return profile and have a material component of depreciating capital investment. For example, the average economic lifespan of permanent crops like almond orchards, is typically around 25 years. Once an orchard or vineyard is planted, the investor is locked into that crop for many years, often decades. Market fluctuations, disease, or pest infestations can lead to significant losses, as seen with the citrus greening disease that caused nearly \$2.9 billion in losses in Florida's orange groves from 2007-2014. According to NUVEEN, "Roughly 40% to 70% of the value of the permanent crop is above the ground in the form of a tree or vine that makes replanting annually cost-prohibitive. **These crops historically have delivered higher average income returns than row crops, but they also have experienced higher volatility on a year-to-year basis.**"

In contrast, row crop farmland is a largely non-depreciating asset, that offers superior flexibility as the crops are replanted each year. If the market for one crop is unfavorable, the operator can switch to another crop the next season. NCREIF data shows that row crop farmland has consistently appreciated, even in challenging economic times, due in part to this flexibility.

CAPITAL INTENSITY:

Investing in permanent crops is capital intensive due to high upfront and ongoing costs for planting perennial crops and then establishing and maintaining necessary infrastructure, such as irrigation. For instance, planting an almond orchard can cost up to \$6,000 per acre, and investors often must wait 3-5 years before seeing any returns.

Row crops, on the other hand, demand significantly less upfront and ongoing capital investment. The costs are primarily tied to working capital (seeds, fuel and fertilizers) which produce returns in a single season. This reduces financial risk.

WEATHER RESILIENCE:

Permanent crops are more vulnerable to extreme weather conditions due to their long-term growth cycle. A single year of drought or frost can devastate an entire orchard or vineyard, with long-lasting impacts. For example, California's drought from 2012-2016 caused billions in losses for almond growers. Because these crops cannot be replanted annually, recovery from extreme weather events is slow and costly.

Row crops are more resilient in this regard, as they can be replanted annually. If a crop fails one year due to adverse weather, operators can try again the following season with limited long-term damage. This annual reset lowers the overall weather-related investment risk, as illustrated by USDA data showing consistent recovery in row crop production post-drought.

WATER DEPENDENCY:

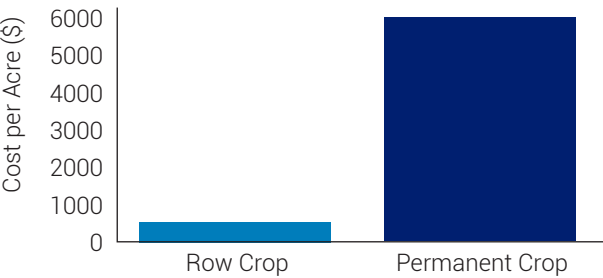
Water availability is critical in agriculture, and permanent crops tend to have the highest water requirements. Almonds, for example, require about 1.1 gallons of water per almond produced. In drought-prone regions, this can significantly increase the risk of investing in permanent crops, as water scarcity drives up operating costs while simultaneously reducing yields.

Row crops depend far less on manual irrigation. Most rely on natural rainfall, reducing the dependency on external water sources and, consequently, the financial risk associated with water shortages and installing and maintain irrigation infrastructure.

LABOR INTENSITY:

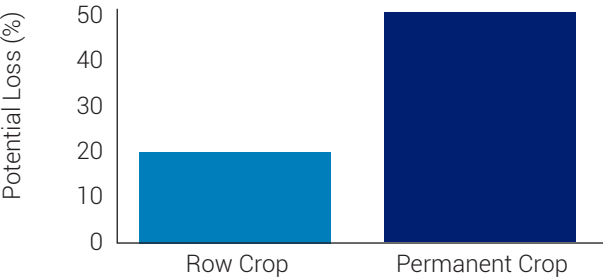
Permanent crops require more labor inputs, especially for tasks like harvesting, pruning, and pest management. Rising labor costs have made permanent crop farming increasingly expensive. For example, almond orchards require intensive manual labor throughout the growing season, leading to higher operational risks in the face of tight agricultural labour markets.

Chart 3: Capex Intensity Comparison



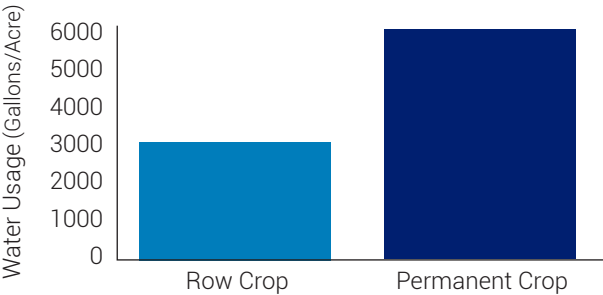
Source: University of California Cooperative Extension

Chart 4: Weather Risk Comparison



Source: USDA Economic Research Service

Chart 5: Water Dependency Comparison



Source: Almond Board of California

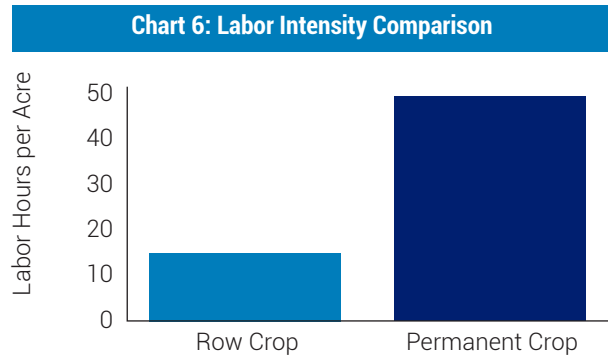
Row crops, in contrast, are more mechanized. Planting and harvesting are largely automated, reducing labor costs significantly. This lower reliance on human labor inputs reduces operational risk.

CONCLUSION:

We believe investing in row crop land presents less risk compared to permanent crop land across several critical variables. Row crop land benefits from lower capital expenditure, reduced labor intensity, and greater weather and water resilience, while also offering flexibility in terms of crop choice. These factors, combined with the ability to recover quickly from weather-related setbacks, make row crop land a more adaptable investment. Permanent crop investments, while potentially offering higher ongoing operational returns which can be attractive to investors seeking income generation, come with greater volatility due to their operational complexity, higher capex, and greater vulnerability to environmental factors. It remains to be seen if permanent crop investors will be suitably compensated with incremental returns sufficient to offset the increased risk they are onboarding – i.e. will row crop or permanent crop investors have the higher long-term Sharpe ratios?

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Source: USDA Agricultural Labor Report



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