How to feed 9 billion people sustainably?
Algae Blooms kill marine life, pollute drinking water, increase water-borne diseases, and destroy tourism.
Dead Zone: low-oxygen, or hypoxic, areas in the world’s oceans and lakes

Caused by a process called eutrophication:
- when a body of water gets too many nutrients, principally phosphorus and nitrogen
- intensive agricultural practices, industrial activities, and population growth

Two by-products of eutrophication:
- Algal Blooms
- Hypoxia

Prominent Examples of algae bloom globally:
- Murray River, Australia
- Wuxi, China
- Kisumu, Kenya

Since 2004 blooms of toxic algae shut down water supplies for more than 3 million people on 3 continents and have closed hundreds of inland lakes to recreation.

“Runoff from fertilizer contributes 40% of nutrient loading that result in Dead Zones”
High Costs of Algae Bloom

- **United States**: algal blooms in coastal waters are estimated to cost **$82 million/year**
- **Australia**: algal blooms in lakes and rivers are estimated to cost **$160 – 214 million/year**
- **Greece, Italy and Spain**: clean coastal waters **$385 million/year**
- **China**: **$1.58 billion** to clean Lake Taihu and spend an additional **$14.5 billion**
Lake Winnipeg Watershed

- 2nd Largest Watershed in Canada
- Spans multiple provinces/states in U.S. and Canada
- 7 million people live in the watershed
Lake Winnipeg is one of world’s **most threatened** lakes

**Lake Winnipeg Watershed**
- Drains 90% of the prairie agriculture land
- Spans 1M km²
- Second largest watershed in Canada and the 10th largest lake in the world
- Supports a $100 million/year tourism industry and a $25 million/year fisheries industry
- **Hazardous** levels of phosphorous and nitrogen runoff in the last 30 years

**Nutrient Loading**
- 38% of all nitrogen loading in Manitoba is agriculture sourced (estimated 5,200 tonnes annually)
- 32% of all phosphorous loading in Manitoba is agriculture sourced (estimated 1,200 tonnes annually)
- Lake Winnipeg Action Plan identified a goal to reduce nitrogen loading to Lake Winnipeg by 13 per cent and to reduce phosphorous loading by 10 percent
Key Findings

- Use of commercial fertilizer is increasing.
- Fertilizer application in large farms is increasing.
- Less than 25% of farms apply nutrition management techniques in Manitoba and in Canada.
- Manitoba has the highest application rate of fertilizer in Canada.

We need to produce more food in the next 40 years than the previous 10,000 years combined.

(1) Use of nitrogen in fertilizer has doubled in the last 30 years

(2) Largest farms use of fertilizer has increased in the last 30 years

(3) Less than 25% of farms use nutrient management techniques

(4) Manitoba has the highest use of fertilizer in Canada
**Reviving Dead Zones**

### Key Findings

- 60 million tons of bottom animals killed
- 5 million tons of fish killed
- $2 billion in lost fishing revenue
- $500 million in lost tourism revenue
- 21,000 cases of serious waterborne diseases/year

### Black Sea

- Watersheds across central Europe drain via the Danube River into the Black Sea
- During the 1960’s to 1989 subsidies under the Soviet Union increased fertilizer use leading to significant nutrient loading into the Black Sea
- At its peak, the size of dead zone in the Black Sea was 40,000 km² (size of Switzerland)

### Accidental Recovery

- As the Soviet Union collapsed, the fertilizer subsidies ceased causing the price of fertilizer to skyrocket and their use plummet

---

**Fertilizer Use in Danube River (Millions of Tonnes per Year)**

- Phosphorus
- Nitrogen

**Dead Zone Area (Thousands of Square Kilometres)**

- 1971 to 1996
Precision Agriculture

- Farming by the Square Foot
- Nutrient Management
- Potential to dramatically reduce use of fertilizers and pesticides
Precision Agriculture is Farming by the Square Foot

Precision Agriculture (PA):
- In conventional farming, fertilizers and crop control substances are applied uniformly over fields, leading to over-application in some areas and under-application in others.
- PA methods enable fertilizers to be spatially applied to optimize the application using Variable Rate Application (VRA) methods.
- Environmental cost is directly related to over application which allows nitrogen and phosphorous leaching from the field into ground and surface waters.

Advantages of VRA methods:
- Increase yields through VRA.
- Decrease total amount of fertilizers applied.
- Increase profit by reallocating fertilizer to more productive portions of the field.
- Reduce input costs through variable rate fertilizer application.
- Increase quality of production through variable rate application.
Precision Agriculture has the potential to reduce fertilizer and pesticide usage by up to 40%

(1) Elevation

(2) Water Stress

(3) Yield

(4) Soil Quality
Farm Operators will be selected on their ability to use precision agriculture (variable rate application) with goal that 100% of our farms will use nutrient management methods.

**Reasons for lack of PA Adoption**

- **“Not cost effective”**
- **“Initial setup costs are too high”**
- **“Not suitable or appropriate for my farm”**
- **“Too complicated to use”**

**Solutions**

- Dual economic incentives to reduce fertilizer usage: (i) reduction in input costs; (ii) reduction in lease payment
- Partner with innovative precision agriculture technology companies to beta test their equipment
- Filter ineffective precision agriculture solutions at beta tests
- Average farm size in our portfolio 1,500 acres plus (economies of scale)
Key Findings

- **Demographic Changes.** In the last 30 years, average age of farmer increased to 54 years from 47.5 years.

- **Consolidation and Urbanization.** Average size of farms is increasing while the total acreage of farmland is decreasing both in Canada and in Manitoba.

1. Proportion of Farm Operators 55 age or older is increasing

2. Average size of farm is increasing

3. Amount of farmland in Canada is declining

4. Similarly farmland in Manitoba is declining
Prairie Lake REIT

- Attractive Cash Yields
- Inflation Hedging
- Low Volatility
- Consistent Returns
- Low Correlations
- Sustainable
- Scalable
Row Crops are fertilizer intensive

- **Row Crop**: annual crops such as corn, soya beans, cotton, wheat, and rice.
- **Permanent Crop**: perennial crops such as fruit and nut crops.
- **Livestock**: land leased to local operators for grazing or direct livestock ownership and operation.

**Farmland Investment**

- Row crops are great candidates for reducing fertilizer usage through variable rate application.
- Row crops produce a relatively constant rate of return 3 – 5% with low volatility.
- Row crops available in Manitoba: wheat, barley, rye, flax seed, corn, oats, soy bean, soy meal, canola meal.

### Investment Process

#### Sourcing
- Farmland sourced through an in-house team of field representatives (target inefficient farmland near and around Lake Winnipeg)

#### Investment
- Purchase farmland that meets the fund’s investment criteria
  - Look for high quality tenant/operators
  - Properties cash-leased with incentives to reduce fertilizer usage
  - Renters are required to purchase crop insurance

#### Rental Income
- Incentivize implementation of precision agriculture techniques
  - Partner with PA technology companies

#### Management
- Turn over fully converted farmland at optimal exit points (management discretion)
Timeline

**Farmland Acquisition**
- Funds used for farmland acquisitions
- Portfolio is constructed according to investment criteria
- Acquisitions continue until fully invested

**Portfolio Management**
- Farmland strategies are actively managed
- Renter’s farmland practises are monitored and reviewed for compliance with fertilizer reduction mandates
- Achieve REIT status

**Long Term Divestitures**
- Farm sales to realize favourable returns
- Catalytic capital turnover
- IPO (where permitted)

**Prairie Lake REIT**

**Fund Size:** $100 million

**Investors:** $70 million market investors (Series A); $30 million catalytic capital investors (Series B)

**Initial Minimum Investment:** $500,000 for Series A; $5 million for Series B

**Lock-up Period:** 2-3 years for Series B (negotiated)

**Early Redemption Fee:** 3-5% for Series A (first 2-3 years, negotiated)

**Management Fee:** 1%

**Performance Fee:** 20% on capital appreciation over 20% hurdle rate

**Target Acquisition:** 60,000 acres of row crop farmland

**Year 1**

**Year 2 - 5**

**Year 5+**
Manitoban Farmland

- Farmland ownership restrictions have kept land values low, creating a near term opportunity.
- A significant value gap remains between Manitoban farmland and that of surrounding provinces, which we expect to close over the medium term.
- The historical 10 year CAGR of farmland in Manitoba has been 10%.
- We conservatively assume a long run average growth rate of 5% for Manitoban farmland.

Manitoba Farmland Value Increase

![Graph showing the value increase of Manitoban farmland from 2004 to 2013 with a 10% CAGR.]
**Funding Approach**

- The emergence of impact investing has given rise to Catalytic Capital
- Catalytic Capital are investors willing to forego market returns in order to reach environmental or socially impactful goals
- Catalytic Capital is an ideal fit for our structure to compensate investors for the loss in cash returns stemming from the scaling down of lease rates
- Dual class unit structure for core Catalytic Capital and Cash distributing units

<table>
<thead>
<tr>
<th>Market Investors – 70%</th>
<th>Catalytic Capital – 30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series A unit holders</td>
<td>Series B unit holders</td>
</tr>
<tr>
<td>$70mm total</td>
<td>$30mm total</td>
</tr>
<tr>
<td>Average: $0.5 – 1 million ticket size</td>
<td>Average: $5 – 10 million ticket size</td>
</tr>
<tr>
<td>70 – 140 market investors receiving cash distributions</td>
<td>3 – 6 long term catalytic investors</td>
</tr>
<tr>
<td>Expected yield 3-6%</td>
<td>10 - 20 Year time horizon</td>
</tr>
<tr>
<td>5% early redemption fees within 5 years</td>
<td>Patient money to capitalize on the long term land appreciation</td>
</tr>
</tbody>
</table>
**Returns Catered to Investor Preference**

**Market Investors**
- Annual Cash Distributions 3 – 6%
- 7% Capital Appreciation

**Investment**

**Prairie Lake REIT**
- **Cash Leases**
  - $70 - $100/acre

**Purchase**

**Operating Farms**
- 7% Total Appreciation:
  - 5% Market Value Appreciation
  - 2% Economic Value Appreciation

**Catalytic Capital**
- 7% Capital Appreciation

**Return to Series A Unit Holders**
- 5% Value Appreciation
- 2% Economic Value Appreciation
- 3 – 6% Cash Returns after expenses
- 10 – 13% Total Return

**Return to Series B Unit Holders**
- Catalytic Capital Investors
- 5% Value Appreciation Only
- 2% Economic Value Appreciation
- Realization of Environmental Impact Goals
(1) Historical Risk and Return for farmland and selected asset classes

Opportunity #1

- U.S. and Canadian farmland assets have higher returns and lower volatility than U.S. and Canadian equities.

(2) Farmland Correlations with Other Asset Classes

Opportunity #2

- Farmland has historically low correlations to equities, real estate and negative correlations with traditional fixed income instruments such as T-bills and bonds.
Motivation for a Private REIT

Ownership Restrictions:
- Manitoba prohibits public entities from owning more than 40 acres of farmland
- Required that 100% of the beneficial owners of farmland are Canadian Residents

Tax Efficiency:
- REITs are ideal for holding real estate that produce steady cash flows
- Entity is taxed at the unit holder level only, avoiding double taxation

Higher Yields:
- REITs are required to distribute all their taxable income to unit holders
- This ensures high yields to unit holders
- Very attractive in a low interest rate environment

Challenges
- 150 Unit Holders
- Incorporating Catalytic Capital
- Risk of capital flight

Innovative Structure

Prairie Lake REIT
- Canada’s 1st agriculture REIT
- North America’s 2nd agriculture REIT
- Gladstone Land Corporation:
  - Farmland REIT
  - IPO in 2013 (NASDAQ)
  - Owns a variety of farmland across 5 US states

Mitigation
- May not qualify as a REIT at inception
- Dual Class unit structure
- Early redemption fees/lock-up periods (if permitted)
### Risks and Opportunities

#### Government Funds Available

**AgrInnovation Program**
- C$500mm available to support agriculture technologies

**Lake Winnipeg Stewardship Fund**
- Potential to establish a local non-profit to assist with nutrient monitoring

#### Tax Credits
- Nutrient Management Tax Credit – 10% of the eligible expenditures of a farming operation

#### Additional Funding Options

**Farm Credit Canada**
- Levering up the fund at favorable interest rates

**Lake Winnipeg Stewardship Fund**
- Potential to establish a local non-profit to assist with nutrient monitoring

#### Risks

- Yield and Price Risk
- Legal and Regulatory
- Market Illiquidity/Price Discovery
- Commodity Fluctuation
- Market Concentration Risk
- Environmental Risk
Cohesion of all Stakeholders

Faced with a case of **Spiralling Commitments**:

- Remote landowners do not share in environmental obligations
- Farmers are not incentivized to go below government fertilizer limits
- Governments are on a double edged sword where they could improve environmental regulations at the expense of their industry
- It requires the first industry to take action before others will also follow suit

**Prairie Lake will provide the platform to launch a revolutionary shift in agriculture**

**The Adoption Framework**

- A shift in the status quo requires either a legislative change or a commercial benefit

- **Owners**
  - Environmental Stewardship
  - Access to a high yielding asset class

- **Farmers**
  - Dual Economic Incentives
  - Industry and Environmental Sustainability

- **Precision Agriculture**
  - Their commercial success is dependent on the technology’s environmental success

- **Prairie Lake REIT will align all stakeholders to overcome the challenge of spiralling commitments**
## Appendices

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Summary

Problem Statement: To feed a growing population, fertilizer usage on farms has doubled in the last 30 years in Canada.

Environmental Impact: Fertilizer runoff into lakes and oceans are creating “dead zones”. E.g. Lake Winnipeg (10th largest lake in the world) is at the risk of becoming a dead zone because of nutrient pollution from point and non-point sources

Required Impact: 100% adoption of nutrient management of farm’s owned by the fund; Reduce fertilizer usage by 20% without effecting yields

Solution: Fund raised with a mandate to:

1. Purchase inefficient farmland around Lake Winnipeg;
2. Lease purchased land to farm operators;
3. Incentivize farm operators to implement precision agriculture techniques to reduce fertilizer usage by 20%

Projected Returns:

(i) Cash Returns: 3 – 6% (Series A investors only);
(ii) Capital Appreciation: 7% annual; and
(iii) Total Returns: 10 – 13% annual;

Prairie Lake REIT

Fund Size: $100 million

Investors: $70 million market investors (Series A); $30 million catalytic capital investors (Series B)

Initial Minimum Investment: $500,000 for Series A; $5 million for Series B

Lock-up Period: 2-3 years for Series B (negotiated)

Early Redemption Fee: 3-5% for Series A (first 2-3 years, negotiated)

Management Fee: 1%

Performance Fee: 20% on capital appreciation over 20% hurdle rate
Prairie Lake Capital Partners Team

- 3 Master’s of Finance Candidates, expected 2016
- Expertise and knowledge of Manitoba landscape
- Diverse skill team including Law, Accounting and Engineering

Srijan Agrawal

- Eight Years of Corporate Law Experience
  - Strong skillset in fund structuring

- Education
  - LL.B. and HBA, University of Western Ontario, 2006

Michael Szaura

- Born Manitoban and Lake Winnipeg Supporter
  - PricewaterhouseCoopers – advise and provide assurance services in agriculture sector (Senior Associate, 2009 – 2014)
  - Lived in Winnipeg, Manitoba for 25 years

- Education
  - Chartered Accountant, 2014
  - Master’s of Accounting, University of Saskatchewan, 2013
  - Bachelors of Commerce Hons., 2011

Francois du Toit

- Engineer & Technical Liaison
  - Edgecrest Capital – mining and fertilizer coverage (Equity Research, 2013 – present)
  - Pinetree Capital (Research Associate 2012)

- Education
  - Chartered Financial Analyst Candidate
  - BASc, Materials Science and Engineering, University of Toronto, 2012
Global population, which is estimated to have reached 7.3 billion in 2015, is projected to increase to 9.55 billion by 2050.

Arable land per capita (hectares per person)

<table>
<thead>
<tr>
<th>Country</th>
<th>Arable land per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1.5</td>
</tr>
<tr>
<td>Canada</td>
<td>1.3</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>1.0</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>0.9</td>
</tr>
<tr>
<td>Argentina</td>
<td>0.8</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.5</td>
</tr>
<tr>
<td>Uruguay</td>
<td>0.3</td>
</tr>
<tr>
<td>United States</td>
<td>0.2</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.2</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0.1</td>
</tr>
<tr>
<td>Chile</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Source: CIA Fact book

Value of the investment opportunity

- Canada has second largest arable land per capita in the World
- The universe of possible investments in agriculture much higher than timber (a competing asset class)
- Estimated value of farmland in Canada is nearly $200 billion

Source: Global AgInvesting Research & Insight Estimates
56% of the Lake Winnipeg Watershed is Cropland
Case Study: Lake Winnipeg Watershed

The Situation

- Nutrient overloading in order to meet crop yield expectations
- High levels of runoff into Lake Winnipeg and surrounding watershed
- Bulrushes and cattails planted in order to absorb nitrogen
- Milling of bulrushes and cattails into fertilizer

Key Issues

- Closing the agriculture loop
- Application of precision agriculture
- Healthy run off levels
- Supply of cattails and bulrushes
- Growth of surrounding farms

Current Initiatives

- Over $1 Billion invested over the next 5 years into Lake Winnipeg
- $20 Million invested in order to reduce phosphorus in provincial parks
- Nutrient Management Tax Credit – 10% of the total eligible expenditures of a farming operation (corporation)
- Riparian Tax Credit – property tax credit designed to encourage farm operators to upgrade their management of lakeshores and river and stream banks

Proposed Solution
Social Impact – Lake Winnipeg Watershed

Fisheries

- Approximately 800 commercial fishers operate on Lake Winnipeg
- 56% of the total weight of Manitoba commercial fishing production comes from Lake Winnipeg
- Total landed value of commercial fish production of Lake Winnipeg is $16,259,317

Recreation and Power

- Recreation and tourism along the Red River and Lake Winnipeg are estimated to contribute $110 million per year
- 10,000 cottages located around the south basin as well as nine provincial parks and several non-government camps
- Sale of hydro-electricity generates nearly $1.9 billion
Red River contributes 70% of phosphorous and 40% of nitrogen loading into Lake Winnipeg

- Only 10% flow of water into Lake Winnipeg is from Red River but the river is by far the biggest contributor to nutrient loading.
- 3 million acre of farmland around Red River in the highlighted segment above.

Target farmland adjoining Red River:

- Only 10% flow of water into Lake Winnipeg is from Red River but the river is by far the biggest contributor to nutrient loading.
- 3 million acre of farmland around Red River in the highlighted segment above.
Precision Agriculture is a $20 billion industry

<table>
<thead>
<tr>
<th>Silicon Valley Incubators</th>
<th>Big Players</th>
<th>Technology</th>
</tr>
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<tbody>
<tr>
<td>Royse Law AgTech Incubator</td>
<td>Monsanto</td>
<td>Drones</td>
</tr>
<tr>
<td>The Yield Lab</td>
<td>DuPont</td>
<td></td>
</tr>
<tr>
<td>AgFunder</td>
<td>Bayer</td>
<td>Android</td>
</tr>
<tr>
<td>Farm2050</td>
<td>BASF</td>
<td></td>
</tr>
</tbody>
</table>
### Farm Ownership restrictions in Canada

<table>
<thead>
<tr>
<th>Province</th>
<th>Legislation</th>
<th>Ownership Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manitoba</td>
<td><em>Farm Lands Ownership Act</em></td>
<td>Persons who are not Canadian citizens or permanent residents, as well as entities that are not family farm corporations, municipalities, local governments or government agencies, or qualified immigrants, as defined under the legislation, are limited to ownership of not more than 40 acres.</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td><em>Saskatchewan Farm Security Act</em></td>
<td>Persons who are not a Canadian citizen or resident as well as non-Canadian owned entities, as determined under the legislation, are limited to ownership of not more than 10 acres.</td>
</tr>
<tr>
<td>Alberta</td>
<td><em>Agricultural and Recreational Land Ownership Act; Foreign Ownership of Land Regulations</em></td>
<td>Persons who are not a Canadian citizen or permanent resident or that are foreign governments, corporations incorporated elsewhere than in Canada, or foreign-controlled corporations, as determined under the legislation, are limited to ownership of two parcels containing, in the aggregate, not more than 20 acres.</td>
</tr>
</tbody>
</table>
Prairie Lake REIT

**Trustee**
- Independent Oversight
- Act on Unit Holders’ Behalf

**OpCo Manager:**
- Sourcing Farmland
- Hiring Farm Managers
- Sourcing new Capital
  - 1% Management Fees
  - 20% Performance Fee above 20% capital appreciation paid every 5 years.

**Class B Unit Holders**

**Class A Unit Holders**

**3rd Party Operator**

**Operating Farms**

**Agricultural/Environmental Mandated Foundations**

**Family Offices**

**Accredited Investors**

**Potential Debt Providers (FCC)**

Farm Portfolio to act as incubator for Precision Agriculture companies to develop, benchmark, and promote their technologies.

**Lease Income**

**Leases**

**Purchase**

**Unit Purchase**

**Cash Distributions**

**REIT Structure**
Scaling Lease Rates by Reducing Fertilizer Inputs

Savings to Farmers for decreasing inputs: $30/acre

Farmers will be able to reduce their lease rates by reducing their fertilizer inputs.

A 20% reduction in fertilizer inputs below the Manitoban limits, for the applicable soil class, will be compensated with a $30/acre decrease in lease rates.

The figure above illustrates a 5-year time line to reach the appropriate fertilizer reduction rates.

<table>
<thead>
<tr>
<th>Nutrient Management Zone</th>
<th>Agriculture Capability Soil Class</th>
<th>Soil Nitrogen Limits (lb/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1</td>
<td>Class 1, 2, 3</td>
<td>140</td>
</tr>
<tr>
<td>N2</td>
<td>3M, 4 and 5M</td>
<td>90</td>
</tr>
<tr>
<td>N3</td>
<td>5 not under irrigation</td>
<td>30</td>
</tr>
<tr>
<td>N4</td>
<td>Class 6, 7, organic</td>
<td>No nitrogen Applications</td>
</tr>
</tbody>
</table>
There is about to be a $2 trillion transfer of wealth between generations

- Total Endowments in Canada $100 Billion
- Top 100 Family Offices in Canada total over $200 Billion
- Impact Investor funds range between $5 million to $700 million
- Market Investor funds range from $5 million to over $1 Billion
- Market Investor focuses on agriculture or agriculture demanded production (food and beverage)

(1) Impact Investors – Endowments and Institutions

(2) Market Investors – Family Offices, Accredited Investors
### Incremental Economic Value Analysis

<table>
<thead>
<tr>
<th></th>
<th>Pre-PA Methods</th>
<th>Post-PA Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total operating revenues</strong></td>
<td>$353,693</td>
<td>$367,222</td>
</tr>
<tr>
<td>Total crop revenues</td>
<td>$270,573</td>
<td>$284,102.65</td>
</tr>
<tr>
<td>Total livestock and product revenues</td>
<td>$18,051</td>
<td>$18,051</td>
</tr>
<tr>
<td>Program payments and insurance proceeds</td>
<td>$29,028</td>
<td>$29,028</td>
</tr>
<tr>
<td>Total other revenue</td>
<td>$36,041</td>
<td>$36,041</td>
</tr>
<tr>
<td><strong>Total Crop Expense</strong></td>
<td>$114,838</td>
<td>$101,806</td>
</tr>
<tr>
<td>Fertilizer and Lime</td>
<td>$56,500</td>
<td>$48,025</td>
</tr>
<tr>
<td>Pesticides</td>
<td>$30,377</td>
<td>$25,820.45</td>
</tr>
<tr>
<td>Seed and plants</td>
<td>$27,798</td>
<td>$27,798</td>
</tr>
<tr>
<td>Other crop expense</td>
<td>$163</td>
<td>$163</td>
</tr>
<tr>
<td><strong>Total Livestock expenses</strong></td>
<td>$7,797</td>
<td>$7,797</td>
</tr>
<tr>
<td><strong>Total Machinery Expense</strong></td>
<td>$42,007</td>
<td>$42,007</td>
</tr>
<tr>
<td>Incremental PA related Expenses</td>
<td>0</td>
<td>$11,350</td>
</tr>
<tr>
<td><strong>General Expenses</strong></td>
<td>$106,650</td>
<td>$106,650</td>
</tr>
<tr>
<td><strong>Net Operating Income</strong></td>
<td>$82,401</td>
<td>$97,611</td>
</tr>
<tr>
<td><strong>Per Acre</strong></td>
<td>$72.60</td>
<td>$86.00</td>
</tr>
<tr>
<td><strong>Capitalization rate</strong></td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Economic Value</strong></td>
<td>$1,452.00</td>
<td>$1,720.02</td>
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<tr>
<td><strong>Average size of farms</strong></td>
<td>1,135</td>
<td>acres</td>
</tr>
<tr>
<td><strong>Assumptions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yield Increase</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Fertilizer/Lime and Pesticides (Reduction)</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>PA Expenses</td>
<td>$10 acres</td>
<td></td>
</tr>
<tr>
<td>Incremental Economic Value (Return)</td>
<td>18.5%</td>
<td></td>
</tr>
</tbody>
</table>

#### Sensitivity Analysis

<table>
<thead>
<tr>
<th>Yield</th>
<th>0%</th>
<th>2%</th>
<th>3%</th>
<th>5%</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>-13.8%</td>
<td>-7.2%</td>
<td>-3.9%</td>
<td>2.6%</td>
<td>19.1%</td>
</tr>
<tr>
<td>5%</td>
<td>-8.5%</td>
<td>-1.9%</td>
<td>1.3%</td>
<td>7.9%</td>
<td>24.3%</td>
</tr>
<tr>
<td>10%</td>
<td>-3.2%</td>
<td>3.3%</td>
<td>6.6%</td>
<td>13.2%</td>
<td>29.6%</td>
</tr>
<tr>
<td>15%</td>
<td>2.0%</td>
<td>8.6%</td>
<td>11.9%</td>
<td>18.5%</td>
<td>34.9%</td>
</tr>
<tr>
<td>20%</td>
<td>7.3%</td>
<td>13.9%</td>
<td>17.2%</td>
<td>23.7%</td>
<td>40.1%</td>
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<tr>
<td>25%</td>
<td>12.6%</td>
<td>19.2%</td>
<td>22.4%</td>
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<td>45.4%</td>
</tr>
<tr>
<td>30%</td>
<td>17.9%</td>
<td>24.4%</td>
<td>27.7%</td>
<td>34.3%</td>
<td>50.7%</td>
</tr>
</tbody>
</table>

**Inputs**

- **Yield**
- **Fertilizer/Lime and Pesticides (Reduction)**
- **PA Expenses**
# Economic Value Sensitivity Analysis

## Assumptions

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield Increase</td>
<td>5%</td>
</tr>
<tr>
<td>Fertilizer/Lime and Pesticides (Reduction)</td>
<td>15%</td>
</tr>
<tr>
<td>PA Expenses</td>
<td>$7 acres</td>
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## Incremental Economic Value (Return)  
11.6%

<table>
<thead>
<tr>
<th>Yield</th>
<th>0%</th>
<th>2%</th>
<th>3%</th>
<th>5%</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>-20.7%</td>
<td>-14.1%</td>
<td>-10.8%</td>
<td>-4.2%</td>
<td>12.2%</td>
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<tr>
<td>5%</td>
<td>-15.4%</td>
<td>-8.8%</td>
<td>-5.5%</td>
<td>1.0%</td>
<td>17.4%</td>
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<tr>
<td>10%</td>
<td>-10.1%</td>
<td>-3.6%</td>
<td>-0.3%</td>
<td>6.3%</td>
<td>22.7%</td>
</tr>
<tr>
<td>15%</td>
<td>-4.8%</td>
<td>1.7%</td>
<td>5.0%</td>
<td>11.6%</td>
<td>28.0%</td>
</tr>
<tr>
<td>20%</td>
<td>0.4%</td>
<td>7.0%</td>
<td>10.3%</td>
<td>16.8%</td>
<td>33.3%</td>
</tr>
<tr>
<td>25%</td>
<td>5.7%</td>
<td>12.3%</td>
<td>15.5%</td>
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<td>38.5%</td>
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<td>30%</td>
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<td>17.5%</td>
<td>20.8%</td>
<td>27.4%</td>
<td>43.8%</td>
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---

# Economic Value Sensitivity Analysis

## Assumptions

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Yield Increase</td>
<td>5%</td>
</tr>
<tr>
<td>Fertilizer/Lime and Pesticides (Reduction)</td>
<td>15%</td>
</tr>
<tr>
<td>PA Expenses</td>
<td>$15 acres</td>
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## Incremental Economic Value (Return)  
22.6%

<table>
<thead>
<tr>
<th>Yield</th>
<th>0%</th>
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<th>3%</th>
<th>5%</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>-9.6%</td>
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<td>0.2%</td>
<td>6.8%</td>
<td>23.2%</td>
</tr>
<tr>
<td>5%</td>
<td>-4.4%</td>
<td>2.2%</td>
<td>5.5%</td>
<td>12.0%</td>
<td>28.5%</td>
</tr>
<tr>
<td>10%</td>
<td>0.9%</td>
<td>7.5%</td>
<td>10.8%</td>
<td>17.3%</td>
<td>33.7%</td>
</tr>
<tr>
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<td>6.2%</td>
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<td>39.0%</td>
</tr>
<tr>
<td>20%</td>
<td>11.4%</td>
<td>18.0%</td>
<td>21.3%</td>
<td>27.9%</td>
<td>44.3%</td>
</tr>
<tr>
<td>25%</td>
<td>16.7%</td>
<td>23.3%</td>
<td>26.6%</td>
<td>33.1%</td>
<td>49.6%</td>
</tr>
<tr>
<td>30%</td>
<td>22.0%</td>
<td>28.6%</td>
<td>31.8%</td>
<td>38.4%</td>
<td>54.8%</td>
</tr>
</tbody>
</table>
Canadian airspace is friendly to U.S. drones

MIKE HAGER

VANCOUVER — The Globe and Mail
Published Monday, Mar. 30 2015, 4:38 PM EDT
Last updated Tuesday, Mar. 31 2015, 3:08 PM EDT

U.S. companies like the online shopping juggernaut Amazon are increasingly choosing Canadian airspace to test new drones after being hamstrung by restrictive laws in their own country that could take up to two years to change, experts say.
Health Impact Pesticides and Fertilizers

- Pesticide exposure = *increased risk of cancers*
- Fertilizers and nitrate break down products = *methemoglobinemia*

**Fertilizers → Nitrates → Methemoglobinemia** (in infants aka “blue baby syndrome”)

- Nitrates from groundwater converted into nitrites in human body
- Nitrites prevent oxygen distribution in the body
- Malfunctioning of the hemoglobin → unable to bind or release oxygen properly
- Results in decreased oxygen delivery to tissues

**Pesticides → Cancer**

- Decreased Oxygen to tissue and brain causing:
  - Fatigue
  - Blue skin
  - Light-headedness
  - Respiratory difficulties
- Nitrites associated with *increase rates of bladder and ovarian cancer and thyroid disease*

---

**Table 1. Global quality score of studies included: Studies are organized by type of cancer; 104 studies were found, and 83 were included.**

<table>
<thead>
<tr>
<th>TYPE OF CANCER</th>
<th>NO. OF STUDIES FOUND</th>
<th>NO. OF STUDIES INCLUDED</th>
<th>SUMMARY OF RESULTS</th>
<th>AVERAGE GLOBAL QUALITY SCORE OF STUDIES INCLUDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>4</td>
<td>4</td>
<td>2/4 found positive associations</td>
<td>4.1</td>
</tr>
<tr>
<td>Breast</td>
<td>12</td>
<td>6</td>
<td>5/6 found positive associations; 1 found decreased risk with exposure</td>
<td>5.0</td>
</tr>
<tr>
<td>Pancreatic</td>
<td>3</td>
<td>3</td>
<td>All found positive associations</td>
<td>4.7</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>32</td>
<td>27</td>
<td>23/27 found positive associations</td>
<td>4.5</td>
</tr>
<tr>
<td>Leukemia</td>
<td>23</td>
<td>16</td>
<td>14/16 found positive associations</td>
<td>4.5</td>
</tr>
<tr>
<td>Brain</td>
<td>11</td>
<td>11</td>
<td>All found positive associations</td>
<td>4.7</td>
</tr>
<tr>
<td>Prostate</td>
<td>10</td>
<td>8</td>
<td>All found positive associations</td>
<td>4.8</td>
</tr>
<tr>
<td>Stomach</td>
<td>1</td>
<td>1</td>
<td>Found a positive association</td>
<td>5.0</td>
</tr>
<tr>
<td>Ovarian</td>
<td>1</td>
<td>1</td>
<td>Failed to find an association</td>
<td>5.5</td>
</tr>
<tr>
<td>Kidney</td>
<td>7</td>
<td>6</td>
<td>All found positive associations</td>
<td>4.2</td>
</tr>
</tbody>
</table>

### Key Advisors

We would like to thank our advisors for their support
Mentor: Jonah Kolb, Vice President, Moore & Warner Farm

<table>
<thead>
<tr>
<th>Investors</th>
<th>Precision Agriculture</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Peter Meech, Analyst, Ontario Teachers’ Pension Plan</td>
<td>• Jan Zalud, Owner/Operator, JZAerial</td>
<td>• Sergio Elport, Manager, Investments, Dream Global REIT</td>
</tr>
<tr>
<td>• Joseph Khran, Manager, Investment Finance, Ontario Teachers’ Pension Plan</td>
<td>• Christopher Dean, CEO, PrecisionHawk</td>
<td>• Alexandra MacKay, Professor, University of Toronto, Rotman School of Business</td>
</tr>
<tr>
<td>• Norm Tasevski, Co-Founder, Purpose Capital</td>
<td>• Olena Shemiakina, Coordinator, Partnership Execution, PrecisionHawk</td>
<td>• Brendan Calder, Professor, University of Toronto, Rotman School of Business</td>
</tr>
<tr>
<td>• Toza Sirski, Pension Manager, Royal Bank of Canada</td>
<td>• Jason San Souci, Principal Geospatial Consultant, PrecisionHawk</td>
<td>• Dr. Melissa Ward, Family Medicine, McMaster University Hospital</td>
</tr>
</tbody>
</table>

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- Olena Shemiakina, Coordinator, Partnership Execution, PrecisionHawk
- Jason San Souci, Principal Geospatial Consultant, PrecisionHawk
- Jordan Walker, GIS Manager, Ventus Geospatial

**Others**
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