

Farmer-Led Learning

Innovative Best Management Practices for potato production in Ontario

Hosted by researchers at the
University of Guelph

School of Environmental Design and Rural
Development

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ONTARIO
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Ontario
OMAFRA



ontario
potato
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Agenda

**5
mins**

Project Description

Terms, Goals, Objectives, Approach

**5
mins**

Results

Study Context and research findings

**5
mins**

Discussion

Key themes emerging from research

**5
mins**

Questions and Comments

Future research, comments, and audience questions

Part 1

Project

Description

Context

Ontario Potato Sector



The Ontario Potato sector is diverse

- Large, medium, small-scale producers
- Conventional, organic, agroecological
- Fresh (table), Processed (fries, chips), seeds

Concentrated around Southern Ontario

- Concentrated around London, ON and Alliston, ON

Ontario has the largest potato chip sector

- Large-scale, high-intensity, conventional, processed¹

Primary Processing companies

- FritoLay, PepsiCo, McCain, Cavendish, Super-Pufft

Challenges in the sector



Growing potatoes is becoming less viable

Consolidation of farmland

- Rising cost of land, oil and inputs
- Urban and suburban encroachment
- **2006:** 243 farms → **2016:** 147 farms¹

High costs of production

- 148% increase in fertilizer cost from 2021 – 2022²
- Increase in cost of fuel and water

Climate Change

- Droughts, unpredictable rainfall, extreme weather
- Changes in length of production season
- Pests and disease (late blight, Colorado Potato Beetle)

1. Agri-food Canada, Potato Market Review 2020-2021

2. Farm Credit Canada, 2022

Best Management Practices



Image: www.no-tillfarmer.com



“Practical, affordable approaches to conserving a farms soil and water resources without sacrificing productivity” (OMAFRA)

- Context specific and diverse
- Alternatives to conventional production practices
- Associated with: Reduced chemical, fertilizer, pesticide, herbicide use, Agrobiodiversity, soil health
- Innovation: farmer-led trial and experimentation
- environmental, economic, and socially sustainable solutions to production challenges

Barriers impact farmers’ uptake of BMPs

Goals and Objectives



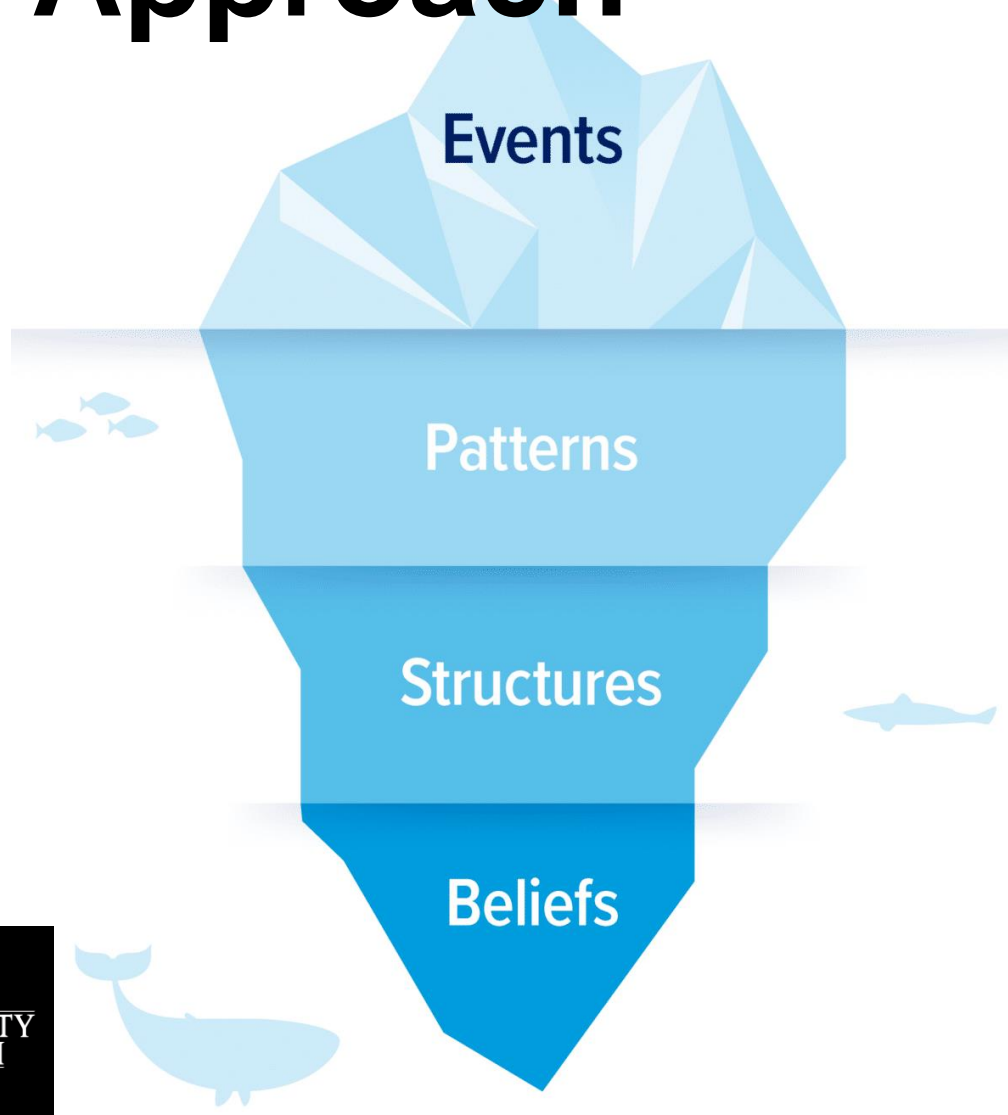
Aim: identify factors influence BMP adoption, and what barriers limit their uptake, and understand how these can be addressed to increase use and uptake

Study focus: Ontario Potato Sector

Objectives:

1. Understand context, challenges impacting farmers throughout the sector
2. Identify different BMPs used throughout the sector, and how different farmers choose different BMPs
3. Understand what external factors impact the use of BMPs and how farmers negotiate those factors

Approach



Systems Thinking

- Theoretical Perspective applied to identify actors involves in a 'system of interest'
- Understand complex interactions between actors that lead to certain outcomes
- Identify leverage points for systemic change
 - (Meadows, 2008; Maani & Cavana, 2007)

Positive Deviance Approach

- Used to identify individuals exhibiting successful approaches to common problems, challenges⁴
- Understand behaviours, conditions, contexts that lead to success in challenging environments⁵
- Solutions already prove to work in context
- Individuals are key to wide-spread behavior change
 - (Zeitlin et al., 1990; Shekar et al., 1992; Mertens et al., 2016)

Methods



Mixed-Methods Approach

Step 1. Systematic Literature Review and policy scan

- Drivers influencing behavioral change towards sustainability

Step 2a. Farm-Level Survey

- Examining demographics, farm characteristics, farm management, challenges

Step 2b. Farmer Field Days and Field Visits

- 3 Field Days hosted by OPB, EFAO, and UofG researchers
- 9 fields were visited across S. Ontario

Step 3. Organizational Meetings

- Ontario Potato Board, EFAO, Ontario Seed Growers Assoc. Ontario organization meeting

Step 4. Workshop

- Workshop presentation, panel discussion with small, medium and large-scale PD producers

Step 5. Semi-Structured Interviews

Cross-Cutting. Participant Observation

- Observational notes at each engagement

Part 2

Results

Farmer Demographics



Large-Scale farmers

- Size: 750+ acres of farmland
- Style: Predominantly Conventional
- Limited diversity – main income potatoes

Medium-Scale farmers

- Size: 150 – 750 acres of farmland
- Style: Conventional, organic
- Limited diversity – main income potatoes

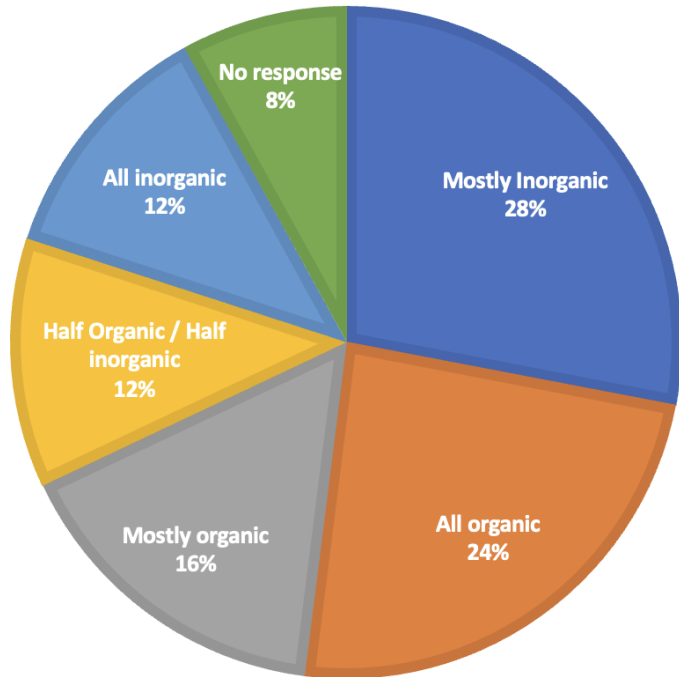
Small-scale farmers

- Size: Under 150 acres
- Style: Conventional, organic, agroecological
- High diversity – main income from other crops

Other Demographics

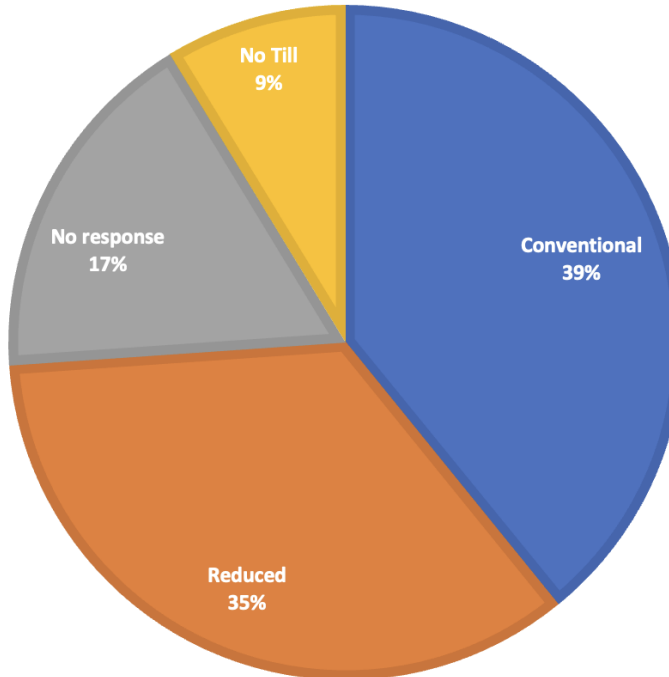
- Age: average age 55
- Gender: Few female farm managers; division of labour on-farm

Farm management



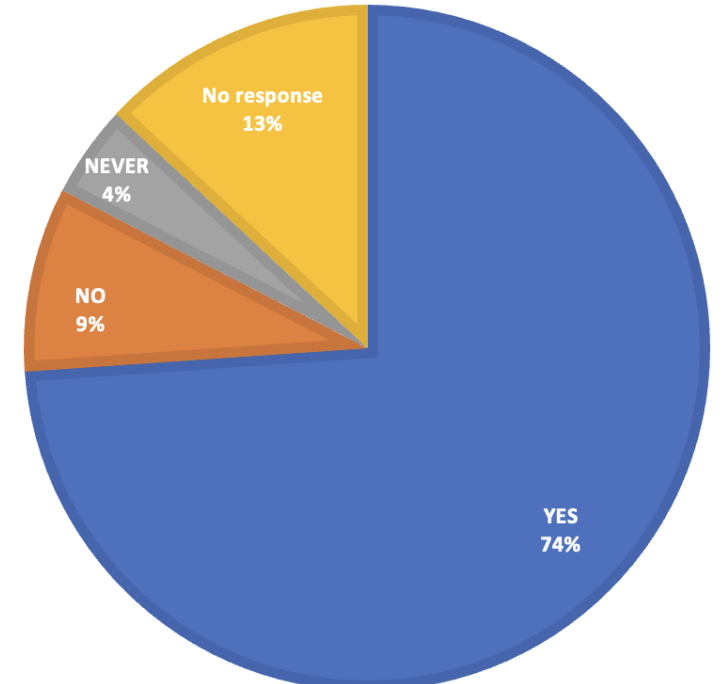
Fertilizer Use

- $\frac{1}{4}$ use solely organic
- $\frac{3}{4}$ use inorganic (in some capacity)



Tillage Use

- Similar conventional and reduced
- Limited no-till



Cover Crops

- Majority of farmers use cover crops

Social Networks



Image: <https://www.bigstockphoto.com/video-74826292/farmer-looking-over-field/>

Knowledge sharing

- small-scale farmers: Learning from peers and neighbours more common for
- Medium and large-scale: Lack of trust and competition amongst
- Cross-cutting:
 - Few survey respondents attend OMAFRA events
 - Less than half of respondents trust government extension, the OPB, or their peers

Organization Participation

- OPB membership is requirement for 5+ acres
- EFAO and OSCIA have high participation, engagement (coaching and practical advice)
- Different styles of organizational / knowledge sharing meetings

Part 3

Discussion

Sustainability



Sustainability: Diverse definitions

- Desire to sustain practices for long-term
- Definitions vary based on what and how grower plans to achieve goals
- What is being sustained: size, scale, style of farm?
- For how long into the future?
- Who will benefit from these practices?

Trade-offs

- BMPs sustainable in one area, adverse effects elsewhere

Motivating factors and beliefs shape BMP use

- Which aspects of farm are prioritized?
- What are their beliefs about what success looks like?

Motivating Drivers



1

Family and Future Generations

- Farming the same land as grandparents
- “Some farmer’s don’t want to give up their land for money. They want to keep farming for future generations”

2

Ecosystem & Soil Health

- Short-term costs, long-term productivity

3

Human Health

- Reduced chemical exposure

4

Community & Social Relationships

- Participation in farmers’ association, learning from peers
- “It’s hard to build bridges when we’re all in competition”

5

Efficiency & Profitability

- Farms must be financially viable for long-term productivity

Structural and Institutional Barriers



Large-Scale Producers

- Most land, % of production, access to capital
- Fewer buyers, dependency on corporate contracts
- Long-term, limit flexibility
- Corporate regulations and production requirements
- Transitions to alternative practices take a long time

Medium-Scale Producers

- Compete in the same markets as large-scale producers
 - Fewer financial resources
- Too large for labour-intensive small-scale production
- Corporate regulations

Small-Scale Producers

- Fewer financial resources than large farmers
- Less space to test, trial, experiment
- Greater reliance on human labour & higher production costs
- High value goods to niche markets
- Diversified production and markets

Conclusion



Systems Thinking

- Multiple factors motivate BMP use – reflecting the trade-offs they are willing to make
- These trade-offs reflect and support various intersecting systems components: social, political, economic, ecological

Positive Deviants

- Positive Deviant farmers are those who are able to actively consider and attend to multiple systems components when making management decisions
 - i.e. weighing social, political, economic, ecological aspects more evenly

Policy Implications

- Policies and programmes supporting BMP use should:
 - consider how existing structures, sectoral mechanisms influence one-dimensional thinking (i.e. only economic)
 - Address with incentives, improved knowledge sharing

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The End.