



# Farm System Co-design for Sustainable and Successful Organic Farming

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# Overview

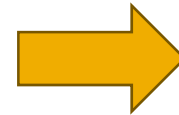
- What is Farm System Co-design (FSC)?
- Why is FSC important?
- U of Manitoba work
- Preliminary outcomes
- Continuing and future work



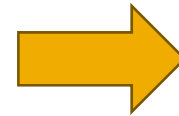
# What is Farm System Co-design?

**In general...**

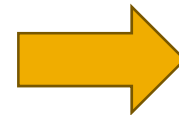
- Collaborative, interactive process
- Develop farm system(s) that meet stakeholder goals
- Iterative implementation, evaluation and adaptation process



**Get some  
people  
together**



**Make a plan**



**Try it,  
tweak it,  
try it again**

# Why is FSC important?

## Themes in the literature...

- Agriculture → multi-functional; competing interests.
- Effective change requires:
  - Multiple stakeholders
  - Working at many scales
  - Integrating wide-ranging skills
  - Without pre-determined means or ends
- Knowledge ≠ innovation
  - The **design activity itself** steers knowledge acquisition toward innovation
- Many possible approaches to co-design
  - Models, prototyping, step-by-step design, “de novo” design...

# Why is FSC important?

## More on the theory:

- **Pretty**, 1995. Participatory learning for sustainable agriculture. *World Dev.* 23: 1247-1263.
- **Meynard** et al. 2012. Re-design and co-design of farming systems. Ch 18 in *Farming Systems Research into the 21<sup>st</sup> Century: The New Dynamic*, ed. by **Darnhofer** et al.
- **Duru** et al. 2015. Designing agroecological transitions: A review. *Agron. Sustain. Dev.* DOI 10.1007/s13593-015-0318-x

## Examples:

- **Dogliotti** et al. 2013. Co-innovation of family farm systems: A systems approach to sustainable agriculture. *Agric. Syst.* 126: 76-86.
- **Moraine** et al. 2016. Co-design and assessment of cropping systems for developing crop-livestock integration at the territory level. *Agric. Syst.* 147: 87-97
- **Farming System Design symposium** (France, 2015)
  - 35 papers on co-design projects



# Why is FSC important?

## A good fit for organic farming...

- Organic farming relies heavily on understanding of:
  - Ecological processes
  - Effects of interacting farming practices
  - Social and economic factors
  - Local conditions and variability

A transitioning organic farmer,  
the day after terminating his first green manure

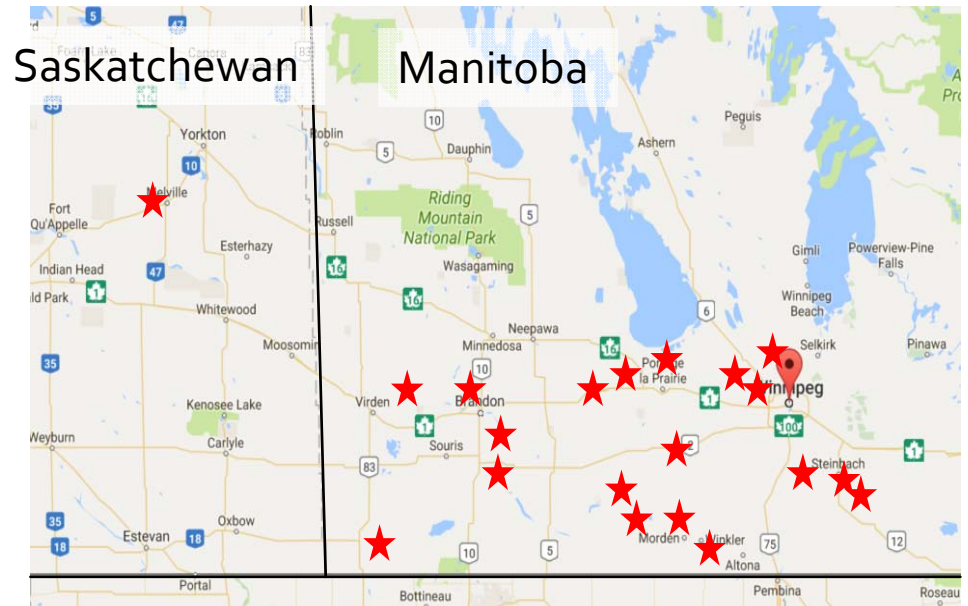


# University of Manitoba work

- Integrate researcher knowledge with farmer knowledge to:
  - Extend research results to practitioners
  - Learn how and why research is (or isn't) being implemented
  - Support farmers' planning and decision-making
  - Design sustainable and successful farm systems

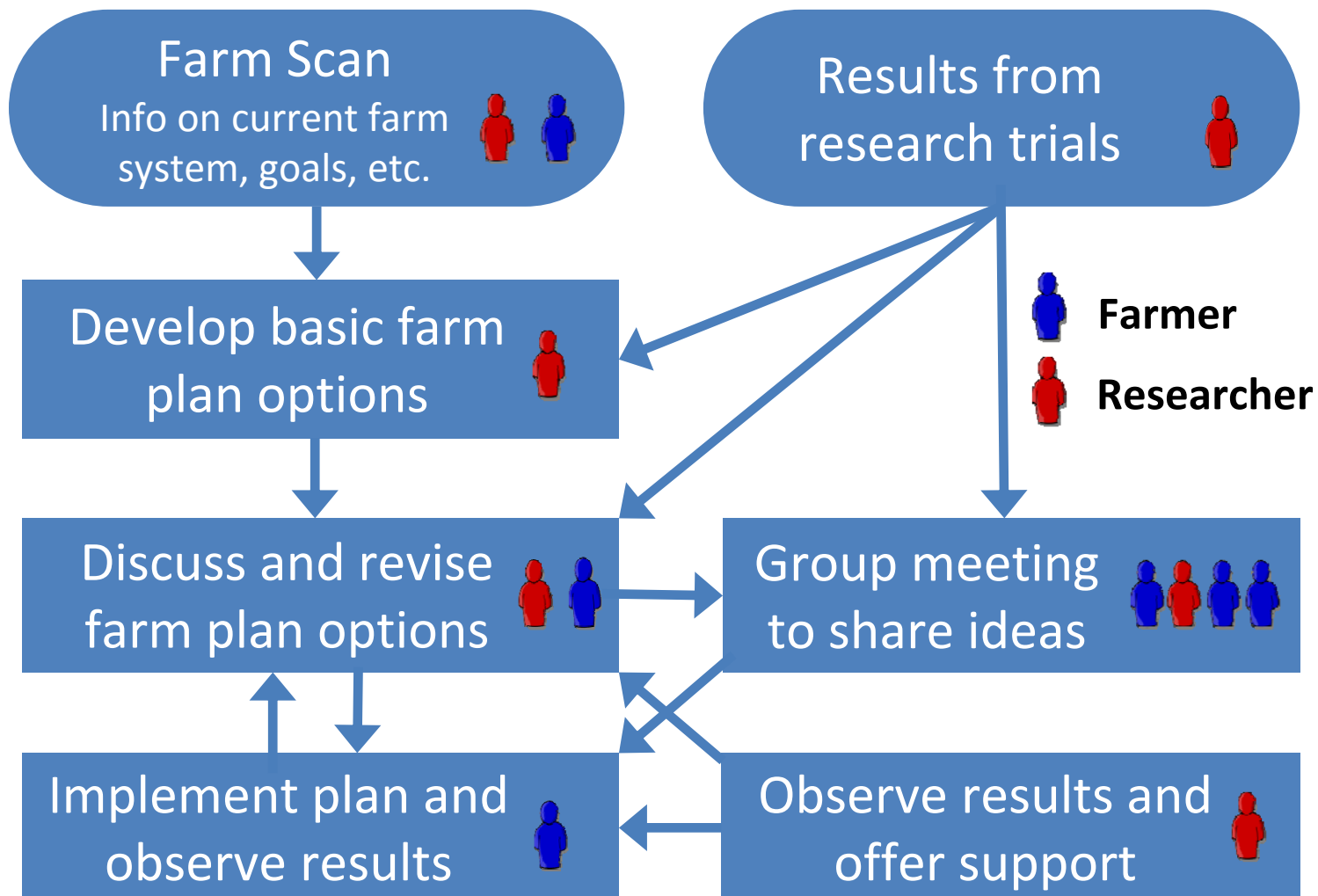
# University of Manitoba work

- Organic soybean / dry bean transition project
  - 12 grain/mixed farms in MB
  - Adopting a new practice / system:
    - Organic farms adding soybean / dry bean to rotation
    - Conventional farms transitioning to organic
- Organic nutrient management project
  - 11 grain/mixed farms in MB and SK
  - New assessment tools to guide nutrient management decisions

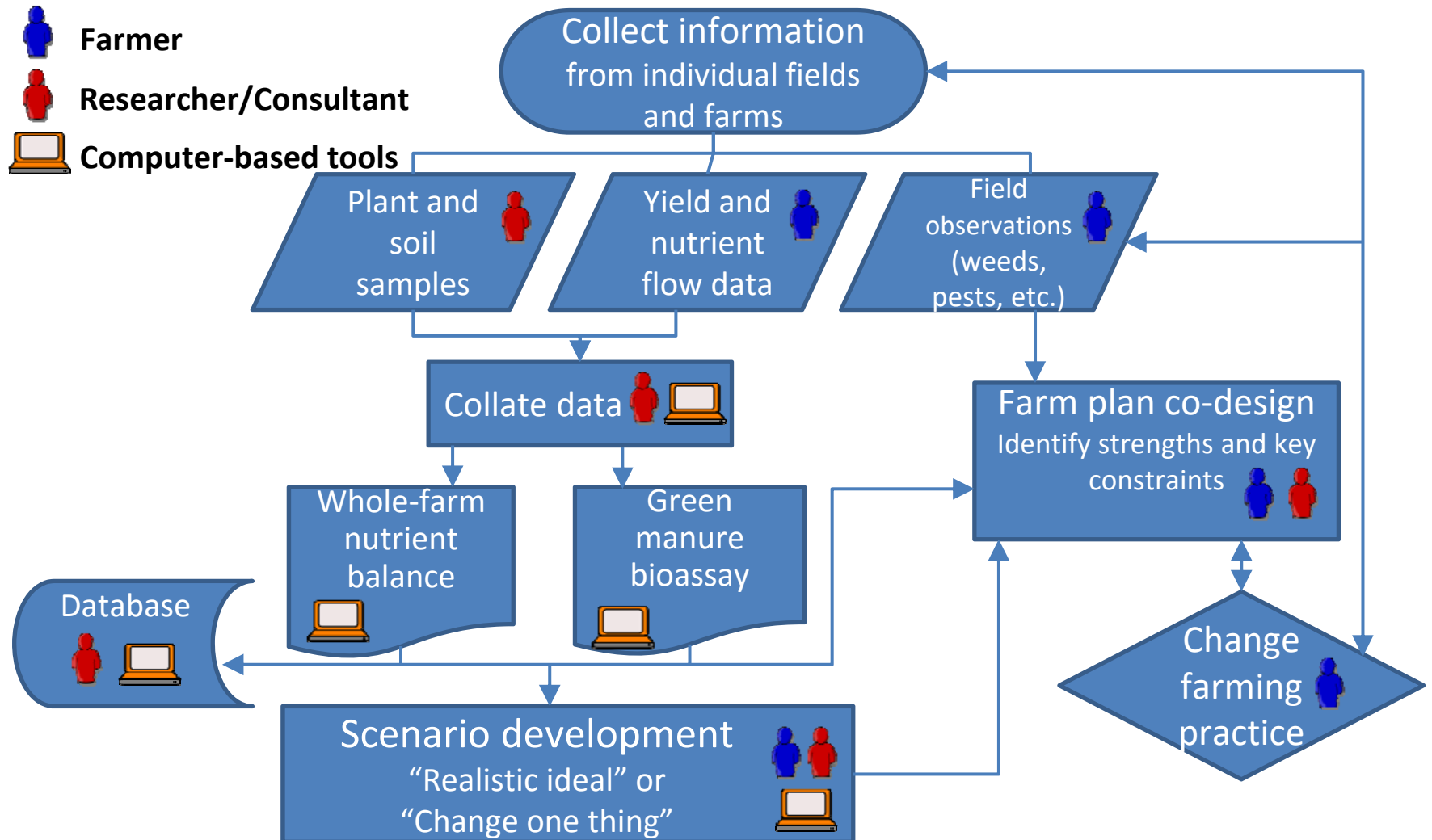




# Organic bean transition



# Organic nutrient management



# Preliminary outcomes

- What information do farmers value?
  - The “how”
    - “Enough theory! How do I make it work?”
  - The “why”
    - “Why isn’t this practice working?”
  - Continuum between specific and general info



# Preliminary outcomes

- What learning approaches do farmers value?
  - One-on-one relationship with researcher / agronomist
  - Farmer-to-farmer learning
  - Group learning (discussions at meetings, field days)
  - Less value placed on the printed / online resources offered in these projects





# Preliminary outcomes

- How to best work with farmers to integrate new knowledge?
  - Farmers never do what you tell them to do 😊
  - Create framework for making good decisions:
    - “Basket of options”, “library of innovations”
    - Theory and rationale
    - Encourage observation and adaptation





# Preliminary outcomes

- How to evaluate success?
  - Change in practices
  - Agronomic outcomes
  - Social, environmental outcomes
  - Mindset
- Monitor farmers' trajectory
  - Positive, neutral, negative



# Preliminary outcomes

- 1 farm is using nutrient assessment tools independently
- 2 farms grew organic soybeans for the first time
  - 5 others are modifying practices to grow soybeans / dry beans in the future
- 3 farms began transition to organic
  - 2 others are transitioning more land to organic
  - 2 others are planning to transition more land
- 4 farms grew green manures for the first time
  - 4 others modified their green manure practices
- 4 farms imported manure for the first time

# Continuing and future work

- Farm visits, winter meetings, formal and informal evaluation
- Inform Organic Agronomy Training program:
  - 120 participants enrolled across prairies
- Extend fertility assessment tools to Prairie Organic Grain Initiative (POGI) project:
  - 11 agronomists
  - 35 farmers
- Involve provincial ag department staff
- Add FSC to the “toolbox” of all agronomists

Manitoba Agriculture soil fertility specialist John Heard (L) is participating in the Organic Agronomy Training



# Thank you!

- Funding support
  - Manitoba Pulse and Soybean Growers
  - ARDI (Agri-Food Research and Development Initiative; Province of Manitoba)
  - Organic Science Cluster II (AAFC)
  - Organic Valley Co-op
- ***Special thanks to all the farmers for their time, hospitality and willingness to work with us!***





# Questions?

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