COVER CROP NET RETURNS AND SOIL HEALTH IMPROVEMENTS

Michael Langemeier
Department of Agricultural Economics, Purdue University

Introduction

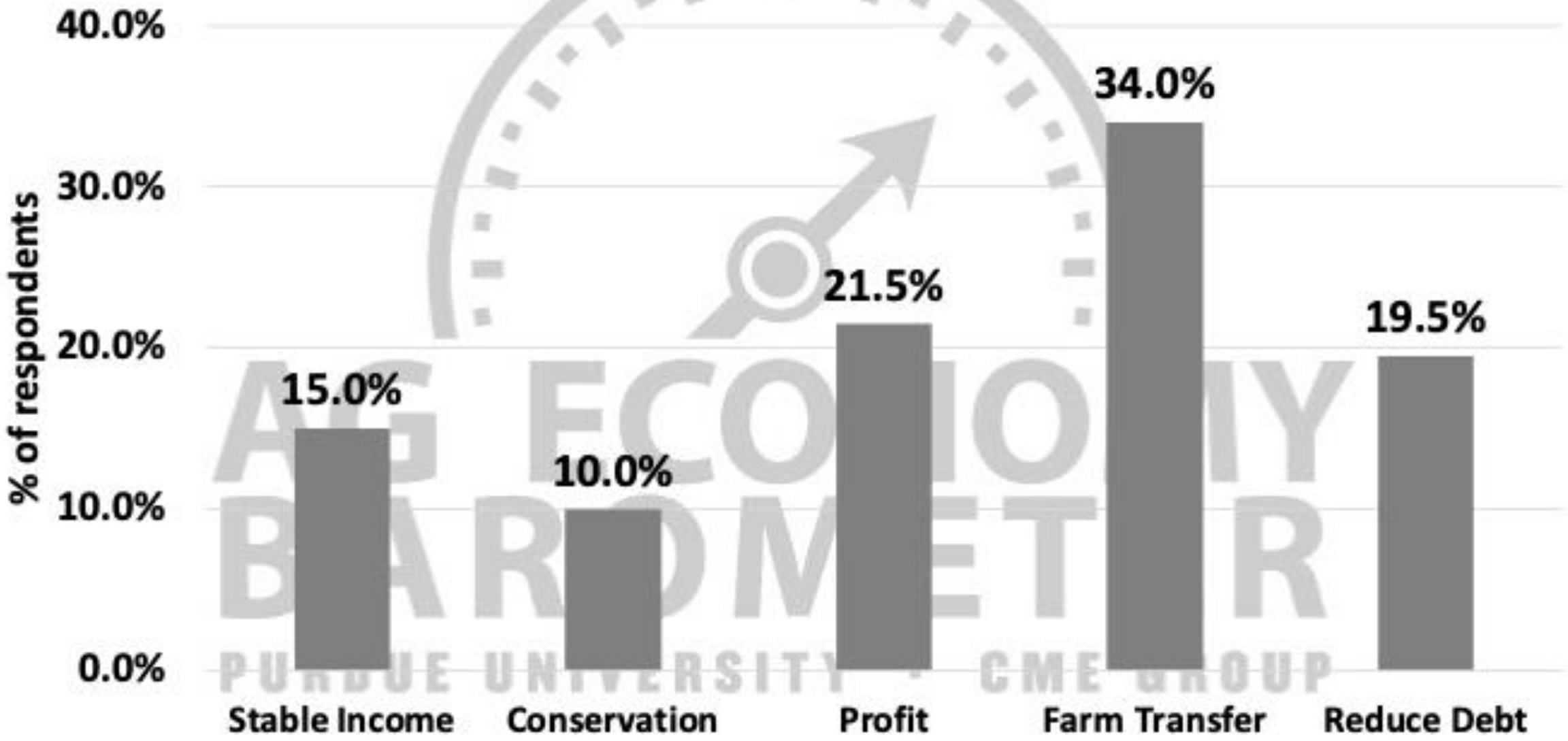
- For most farms, conservation (e.g., adoption of cover crops) is only one of several farm goals, which in addition to conservation may include risk reduction, profitability, farm transfer to a younger generation, and reduction in debt.
- This presentation uses a multi-goal framework to address the tradeoffs between net returns and soil health when adopting cover crops.

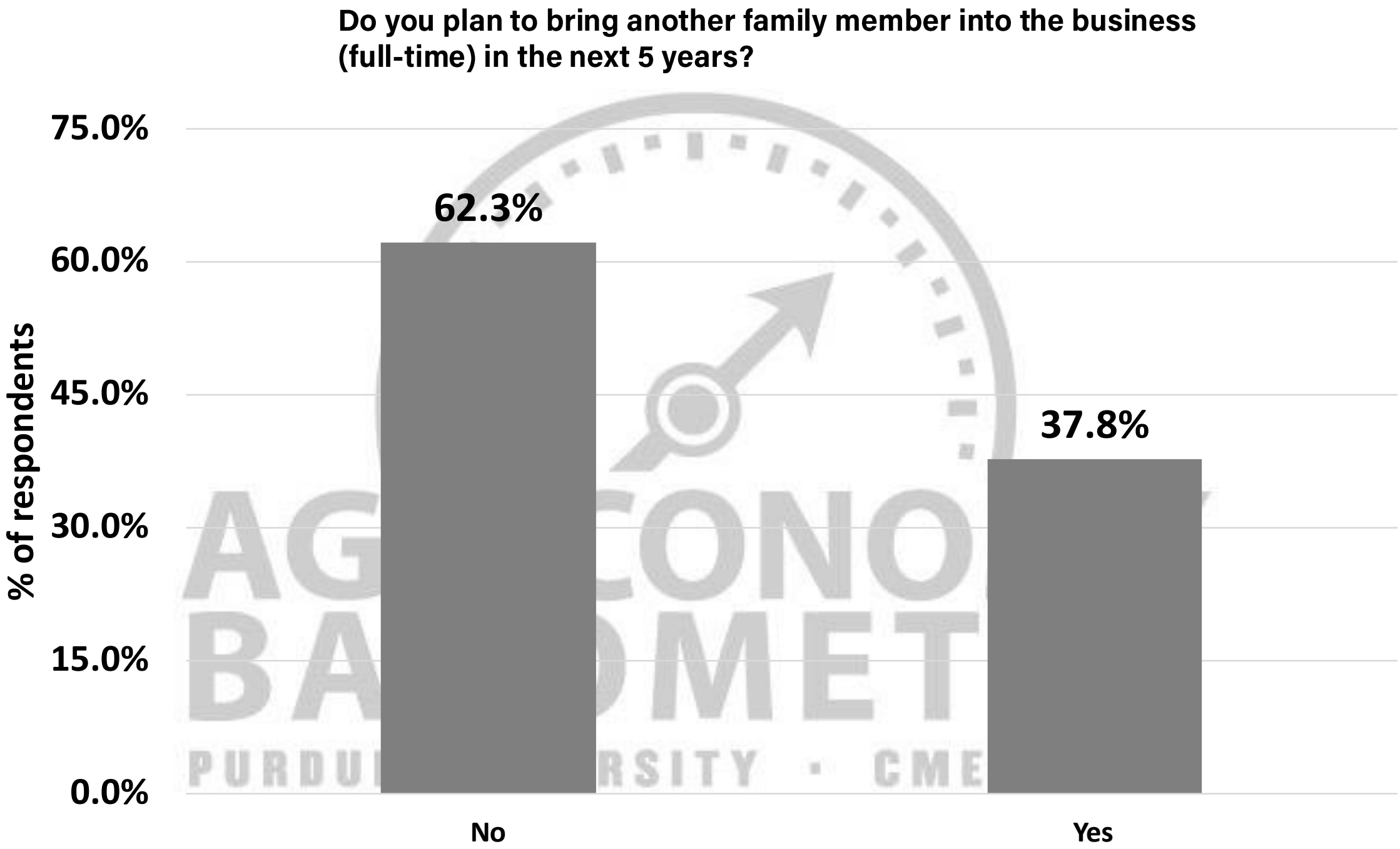
Tradeoffs Between Farm Goals

- It is uncommon for a farm to have a single goal, such as profit maximization or soil conservation.
- Having a hierarchy of goals is important because goals conflict with one another.

- A recent survey asked producers to identify their most important farm goal.
- Choices included the following: maintain stable income, conservation, profit maximization, pass the farm onto the next generation, and reduce debt over time.

What is the most important goal for your operation?




Do you plan to bring another family member into the business (full-time) in the next 5 years?
75.0%
60.0%
45.0%
30.0%
15.0%
0.0%
% of respondents
62.3%
37.8%
No
Yes

Tradeoffs Between Farm Goals

- Scenario analysis is a planning and risk management technique that can be used to evaluate the potential impact of key management decisions.
- Scenario analysis does not provide an optimal solution when farm goals are multi-dimensional.
- Rather it provides a mechanism to explore how a change in the operation impacts multiple goals.
- Scenarios can be thought of as choice experiments in which we compare current practices with planned practices.
- A farm that ranks conservation as their most important goal would be willing to sacrifice more net return than a farm that ranks profit maximization as their most important goal.

Cover Crop Adoption

Scenario Analysis

- We will examine differences in net returns and soil health for three cases. In each case, we will be comparing current practices to planned practices.
  - Case 1: Cover Crop Adoption, No Cost Savings or Closure of Yield Gaps
  - Case 2: Cover Crop Adoption, Cost Savings of $20 per Acre
  - Case 3: Cover Crop Adoption, Closure of Yield Gaps

Case 1

Add Cover Crop; No Cost Savings or Closure of Yield Gaps

Case 1: Add Cover Crop; No Cost Savings or Closure of Yield Gaps

Planned Practices

- Reduced Till (1-Pass Light)
- **Cover Crop; Single Species**
- Corn/Soybean Rotation
- No Manure

Changes Resulting from Planned Practices

- **Net Return Change = -$36 per acre**
- **Reduction in Soil Loss**
- **Reduction in GHG Emissions**
- **Improvement in Overall Health Score**
  - **Improved from -0.5 to 0.0**

Case 2

Add Cover Crop; Cost Savings of $20 per Acre

Case 2: Add Cover Crop; Cost Savings of $20 per Acre

Planned Practices

- Reduced Till (1-Pass Light)
- **Cover Crop; Single Species**
- Corn/Soybean Rotation
- No Manure

Changes Resulting from Planned Practices

- **Net Return Change = -$16 per acre**
- **Reduction in Soil Loss**
- **Reduction in GHG Emissions**
- **Improvement in Overall Health Score**
  - **Improved from -0.5 to 0.0**

Case 3

Add Cover Crop; Closure of Yield Gaps

Case 3: Add Cover Crop; Closure of Yield Gaps

Planned Practices

- Reduced Till (1-Pass Light)
- **Cover Crop; Single Species**
- Corn/Soybean Rotation
- No Manure

Changes Resulting from Planned Practices

- **Net Return Change = -$6 per acre**
- **Reduction in Soil Loss**
- **Reduction in GHG Emissions**
- **Improvement in Overall Health Score**
  - **Improved from -0.5 to 0.0**

Conclusions

- In this presentation, we discussed a conceptual framework that could be used to examine tradeoffs between farm goals.
- Scenario analysis was used to examine the feasibility of cover crop adoption.
- Whether cover crops are adopted depends on the relative importance of the profit maximization and conservation goals to an individual producer.

QUESTIONS OR COMMENTS

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