

**Climate Friendly Farming™ Project**  
**The Socioeconomic Factors Affecting Practicality and Efficacy of Climate Friendly Farming Practices**  
**Year One Report**

**Project Component Leads: Philip Wandschneider**

## Introduction

Socio-economic analysis is an integral part of this project, but this type of analysis cuts across all the components rather than being its own component. Adoption of any changes in agricultural practice requires changes in policy, market circumstances and farm behavior. Identification of new systems and practices has limited value if no one adopts them. Socio-economic analysis will help identify practices and policy instruments that are economically justified, socially acceptable and financially feasible.

Current personnel include: Philip Wandschneider, Professor, School of Economic Sciences [lead]; Hayley Chouinard, Assistant Professor, School of Economic Sciences; Richard Shumway, Professor, School of Economic Sciences; Jake Burkey, Research Assistant; M. Tobias (Toby) Patterson, Research Assistant; Cory Walters, Research Assistant.

*Specific results: see bulleted, italicized, bolded accomplishments*

## Planned Tasks by Objective

- 1) Objective: Adoptability/practicality. Studies of the factors which influence the adoption of conservation practice by farmers are ongoing with funding from the CFF project phasing in for a project begun with other funding on wind erosion conservation practices. This work will provide groundwork for studies of factors influencing farmer adoption of climate friendly farmer practices such as those that increase carbon sequestration or reduce petroleum inputs and adoption of new practices and techniques such as production of bio-fuel feed-stocks or siting of wind generators.

### Activities under objective 1

- *A Masters Thesis has been completed by research assistant Patterson. Data were collected via an anonymous mail survey of farmers from Central Washington dryland areas. The survey contained questions to capture characteristics of top soil loss and air quality related farming management practices, attitudes and preferences. Using this data two studies have been completed. The objective of the first study was to identify a practical proxy for "conservation" or "stewardship." Statistical tests were applied to three proxies. A proxy based on number of adopted practices outperformed proxies based on conservation acreage. Results also show that adoption of conservation practices is negatively related to age, and positively related to perceived profitability and willingness to take risks. The second study estimates farmer willingness to adopt conservation technology by measuring the stated willingness to forgo profit. The parameter outcomes of a Logit regression model are used to calculate a median WTP measure for conservation practice adoption of about \$4-5 forgone profits per acre. We are currently working on referred journal submissions based on these studies. We are also working on publishing a report with the general results of this survey.*

*A new, innovative, internet-based survey on adoption and innovation has been drafted using the above survey as a "pilot." The web based survey will have more interactive features than the paper- mail survey and more specificity regarding practices, attitudes, and adoption behaviors. The survey is at [www.wsusurvey.org](http://www.wsusurvey.org). (To try the draft survey contact Wandschneider for*

password.) For this, and future, surveys, Research Assistant Burkey has developed an innovative tool kit for constructing web-based surveys. This tool will be used in the future to construct similar surveys – whether as follow-ups to the sequence of surveys on farmer conservation/innovation. It could also be used for other parts of the project. As a by-product, this survey construction tool may turn out to have more general application and possibly some commercial potential. (Currently, there are many tools for survey construction, but this survey technology is especially adapted to the web, and it included special tools developed for our study, which should be useful for others.)

The new survey is being tested for usability and for content on coworkers, farmers, and students. After we complete testing of the survey, we will implement the survey in early spring. We are currently working to obtain adequate sample frames. We are hoping to obtain a joint sponsor for the survey to encourage participation.

## 2) Financial feasibility/budgeting

- a. **Objective: Cropping systems.** Economists are working on the financial feasibility of cropping systems by establishing data systems for the Cunningham and the Conservation farms. The Cunningham farm data systems will be used as a prototype/template for the financial accounting to be done across the project. Economists are also collaborating with agronomic scientists to gathering information for Conservation farm analysis. Overall the objective is to lay down baselines and systems to collect and analyzed data over the course of the project.

### Activities under 2a:

- We (Wandschneider and Walters) have researched and found a general program to use for constructing farm financial records.
- We (Wandschneider and Walters) have begun using this financial tool to enter budgets for dryland cropping systems. In particular we have two very preliminary trial budgets – for dryland wheat and for oil seeds grown for biofuels (rapeseed). We wish to extend the oil seeds work to irrigated areas, but we'll work out the protocols on the dryland budgets first.
- We (Wandschneider and Patterson) have worked on farm and social financial aspects of precision conservation technologies in collaboration with Dave Huggins. Huggins et al presented a paper at recent meetings using some of this work.

## b. **Objective: Dairy-digester systems.**

- (Shumway, Wandschneider) We are gathering financial information on waste digesters from the existing literature on economic feasibility of proposed and existing digester designs. We are working to establish a data base which allows for comparison of performance across types of digester including the CFF digester at the VanderHaak farm. We will probably use the same farm budgeting tools as has been adopted for the dryland and irrigated cropping work as one of the tools. The primary areas of economic interest are the effect on financial feasibility and economic impact of marketing byproducts and the effects of economics of scale. Economic researchers are collaborating with others on new proposals

## 3) Social Evaluation.

- a. We (Wandschneider and Walters) are adapting the farm budgeting program (see above) so that we can enter and analyze: 1) community/regional economic impacts 2) socio-economic

*efficiency and 3) environmental “footprint/impacts effects of agricultural practices. We are using the dryland wheat and rapeseed budgets to start with.*

4) Policy Analysis. See work on adoption

#### **Milestones**

- *Completion of pilot survey concerning the conservation practices of dry land farmers (see above).*
- *Completed masters thesis*
- *Completed draft internet survey for adoption/innovation.*
- *Adopted a primary budgetary framework for future economic budgets.*

## Appendix: Overview of Socio-Economic Mission, Goals and Objectives

### Introduction/overview:

If the technical developments developed under the CFF project for the three farming systems are to make the transition from research to practice, the social and economic dimensions of any potential practices must be addressed. A newly developed process, practice or technology has no effect if no one uses it. The purpose of socioeconomic research is to understand the social factors which underlay the adoption and effectiveness of the potential technologies. To realize the overall goals of the CFF, project researchers will examine “micro” socio-economic dimensions -- such as the adoption behavior of potential farmers and other relevant economic actors -- and societal or “macro” socio-economic dimensions. Micro socio-economic dimensions include profitability and risk characteristics, while macro socio-economic dimensions include efficiency and sustainability.

**Overall goals:** Develop and apply measures of the socio-economic practicality and “desirability” of proposed practices and technologies. Analyze the scope and conditions under which these measures hold. Prepare and communicate the socio-economic information to stakeholders, practitioners, and decisionmakers.

### Specific Objectives:

- 1) Adoptability/practicality. Determine if a proposed practice or technology is practical from the operators’ viewpoint. Determine the role of knowledge and information, risks, and other factors in influencing desirability/practicality from the point of view of a potential adopter.
- 2) Financial feasibility. Determine if a proposed practice or technology is financially practical (an aspect of adoptability sufficiently important to treat as a separate objective). Measure and analyze the financial dimensions of prospective technologies and practices and the response of farmers and other social agents to those dimensions. Financial dimensions including profitability, cash flow and “pay-back period”
- 3) Social Evaluation. Measure and analyze the socio-economic impacts of prospective technologies and practices. Estimate efficiency (benefit-cost; cost effectiveness) and environmental sustainability dimensions of proposed practices/technologies.
- 4) Policy Analysis. Determine policy changes which might encourage adoption of a “desirable” practice or technology – where desirability is informed by evaluation but ultimately specified by the appropriate decision-makers. Direct regulation is a traditional approach to promoting social goals, but alternative approaches which restructure incentives through taxes, subsidies and new marketing opportunities are often more effective. Regardless of whether a regulatory or incentive-based approach is taken, analysis of socio-economic behavior will assist in designing policies that have the intended effect.

### Related Grants/Proposals, current:

- 1) Wahl, T.I. (co-leader) and Wandschneider, P.R. (co-leader); Chaddad, F.R. (participant); Chouinard, H.H. (participant); Fiske, E.P. (participant); Heckeley, T. (participant); Holland, D.W. (participant); Huffaker, R.G. (participant); McCluskey, J.J. (participant); Mittelhammer, R.C. (participant); Shumway, C.R. (participant); Yoder, J.K. (participant); Young, D.L. (participant). *Farming and Environment Policy Forum*, Funded by Kellogg Foundation & Farming and the Environment. Funded, \$25,000. 07/2003-06/2006.
- 2) Wandschneider, P.R. (leader); Young, D.L. (participant). *“Assessing Adoption of Best Management Practices for Reducing Wind Erosion on the Columbia Plateau.”* Funded by Columbia Plateau Wind Erosion/Air Quality Project, CSREES Special Grant. \$15,000. 07/2003-06/2004