Proposal for 2003 – 2004
Northwest Columbia Plateau Wind Erosion/Air Quality Project

Objective 7: Human Activity on Suspended Dust and PM_{10} Emissions

Title: Assessing Adoption of Best Management Practices for Reducing Wind Erosion on the Columbia Plateau

Personnel: Principle Investigator: Philip R. Wandschneider, WSU.

Research Objectives
While wind erosion is a physical process, the quantity and quality of wind erosion and dust emissions from agricultural lands depend on the management decisions made by farm operators. Farm management practices can have positive or negative effects on long-term soil quality and on regional air quality. Over the past decade researchers and extension specialists with the Columbia Plateau Wind Erosion/Air Quality Project and associated agencies have identified and promoted adoption of best management practices (BMPs) to reduce wind erosion and dust emissions in the Columbia Plateau. The motivation for the proposed project (renewal) is to understand and facilitate the movement of these BMPs from research to wide-scale on-farm adoption. The policy objective is to learn what economic policies will encourage farmers to be better stewards.

The specific research goals of this project are twofold. The first research goal is to assess whether and to what extent farmers have adopted conservation practices/BMPs. Questions about the nature and extent of adoption include: are farmers using more conservation tillage? Which farmers have adopted new practices, and what specific new practices have they adopted? Can any effect from these changes be detected at this point? The second research goal is to determine what factors induce farm operators to adopt these practices. Questions about the factors that encourage the adoption of stewardship practices include: what are the characteristics of BMPs that are most likely to attract farmer adoption? What additional information do farmers need? What policies can facilitate the adoption of these practices?

Recent Research Accomplishments
Results from 1997 study. The current study is a follow-up to a study of dryland farmers conducted in 1997. The previous study showed that farmers who have adopted multiple conservation practices are younger, better educated and have larger farms than those who adopt one or no practices (Upadhayay et al). Other results from the previous study include:
- Over 95 percent of dryland farmers are using at least one of a list of eight conservation practices.
- On average, respondents were using about four (3.96) of the practices on the list.
- The most popular strategy is leaving wheat stubble in the field over winter followed by delaying rodweeding or decreasing the number of trips (tillage operations).
- For farmers practicing some type of conservation, the most frequently used combination of practices is: (1) leaving wheat stubble over winter, (2) delaying rodweeding or
decreasing number of tillage operations, (3) delaying initial spring tillage, and (4) using more chemical control.

- Almost one-third (28 percent) of the respondents had adopted new conservation practices within the last three years.

**Current Activities**

This proposal is for a grant renewal. Current activities are focused on construction, testing, and implementation of a new survey instrument. To date, we have reviewed the results for the previous study and of other conservation adoption studies. We have also surveyed the conservation literature and consulted with other researchers and farm operators. From this information we have drafted a new survey instrument (See excerpts in attached appendix).

The draft survey instrument is currently (January 2003) being pre-tested and revised. Review, pre-testing and revision of the survey instrument will be completed during the final months of the 02-03 project year. A version of this survey will be taken to the field by the end of the current grant period. We are currently organizing the logistics of survey implementation.

**Proposed Research for 2003-2004**

Research for 2003-2004 will have two components. The first set of activities will comprise continued implementation of the survey. An initial group of farmer surveys will be completed this winter/spring (2003). However, we anticipate implementing this survey with several groups of farmers and we will do another round of surveys in the late fall and early winter of 2003. Funding permitting we intend to use this survey over several years to track changes in farm practices over time. Funding and time permitting we will also use multiple survey methods: mail, telephone, and internet. The second activity will move the research into the analysis and report stages. Data from the initial surveys will be available for preliminary analysis and reports by summer of 2003.

The content of the new survey is based on the 1997 survey, other previous surveys and the literature reviews and pre-tests. The new survey repeats some questions from the 1997 survey in order to investigate changes since 1997. However, the new survey will seek better information in a number of areas. First it focuses more specifically on the farm practices themselves. The previous survey lumped together generic practices that actually can have wide effects depending on how they are implemented. For example “delayed rodweeding, decreasing the number of tillage operations, and delaying of initial tillage” can all be implemented in a number of ways. We want to get better information on how farm practices operationally affect the soil. A key question concerns the timing and extent to which the soil is disturbed.

The new survey will seek more quantitative information on the extent of adoption. In the previous survey, farmers were simply asked whether or not practice A had been adopted. We will assess the when the practice was adopted and over what extent of the farm operations it has been adopted. Also, the new survey will seek more information related to what factors motivate farmers to adopt new practices. In particular, we have constructed some new approaches to gaining information about farmer attitude toward risk and uncertainty as it affects changes in farm practices.
Products/Output
Intermediate outputs from the project will be survey instruments and analysis of the data. The final products will include a report on key results from the study. Final products will also include professional, peer reviewed journal papers.

References
Upadhayay, Young, Wang, and Wandschneider, "How Do Farmers Who Adopt Multiple Conservation Practices Differ from Their Neighbors?" Selected Paper, Western Agricultural Economics Association Annual Meeting, Long Beach, California, July 2002
Appendix: Excerpts From the 2003 Draft Survey Instrument

**Section A: Wind erosion and soil conservation attitudes.**

Sample questions:

A2. How would you describe changes you made to your farming practices because of wind erosion? Would you say…

A5. Most farmers in the Palouse area aren’t very much concerned about wind erosion on their farms.

   SA   AN   ND   SD (circle one)

**Section B: Wind erosion and soil conservation current practices**

Sample questions:

B1. [practice 1: *leaving wheat stubble standing over winter*]. Are you currently using this CONSERVATION practice in your operation?

   1=Yes  2=No  3=Don’t Know  4=No answer

   1. Leaving wheat stubble standing over winter?
   2. Delaying rod weeding or decreasing number of trips?
   3. Delaying initial spring tillage?
   4. Using chemical weed control instead of tillage?
   5. Using no-till or minimum till drill?
   6. Farming or planting wind strips (strip cropping)
   7. Changing crop rotations or cropping intensity?

B2. If YES, then ask.

1. How many years have you used the practice?
2. On how many acres did you use the practice in 2001-2002 crop year?

B3. If respondent answered NO, then ask:

B3a. Is this practice appropriate to your operation?

B4. What is your opinion or the effectiveness of this method in reducing wind erosion?

   1=Not effective  2=Somewhat Effective  3=Effective  4=Don’t know

B5. What is your opinion of the profitability of this method?

   1=Profit reduced  2=Profit unchanged
   3=Profit increased  4=Don’t know

**Section C: Current information and information needs regarding wind erosion and soil conservation current practices**

To help you to decide whether to adopt wind erosion conservation technologies, please indicate if any of the following types of information would be IMPORTANT, SOMEWHAT IMPORTANT, OR NOT IMPORTANT.

(1=Important  2=Somewhat Important  3=Not Important  4=Don’t Know)

C1. EQUIPMENT REQUIREMENTS AND SPECIFICATIONS 1 2 3 4
C2. RESEARCH ON YIELD IMPROVEMENTS 1 2 3 4
C3. RESEARCH ON SOIL QUALITY 1 2 3 4

C11. How much MORE do you know about PM-10 today than you did 5 years ago? Would you say ……..

   1. A LOT MORE
   2. SOMEWHAT MORE
   3. SLIGHTLY MORE
   4. NO MORE THAN 3 YEARS
Section D. Questions about policy and solutions
A number of approaches have been suggested for dealing with the soil and wind erosion problems in the Palouse. Some of these are listed below.

Please tell me whether you would rate each of the following approaches
1- not acceptable, 2- acceptable but not desirable, 3- preferred, or 4- highly preferred

D1. Provide low-cost crop-yield insurance to farmers who use specified practices that reduce wind erosion
D2. Make eligibility for government price support programs conditional upon achieving specified wind conservation standards
D3. Impose fines on all farmers whose top soil losses over a 5-year period exceed standards set by the federal government

Section D: Farmer attitudes and beliefs about risk and uncertainty
E5. Suppose a new method of growing variety wheat were developed that dramatically reduced the year to year variability in yields so that you could produce the same yields almost every year. The only drawback to this new method were that yields were not quite as high as current yields.

If you had the choice between your current methods and current level of yields and this new method which would give the same year-to-year yields, but on average, the new method would produce 2 bushels an acre lower yields, which method would you choose – your present method and yields or the new method.

If you had the choice between your current methods and current level of yields and this new method which would give the same year-to-year yields, but on average, the new method would produce 5 bushels an acre lower yields, which method would you choose – your present method and yields or the new method.

Section E: Demographic information including information about farm organization
E1. What is the highest level of education you have completed?
E3. Which of the following best describes your farming operation? Is it …
   1. PART OF A NON-FAMILY FARM CORPORATION
   2. PART OF A FAMILY FARM CORPORATRION
   3. A PARTNERSHIP WITH ANOTHER FARMER(s), OR
   4. YOU FARM TOTALLY BY YOURSELF
E6. What is your age category?
E8. What percentage of you and your partners’ farmland is leased or rented from family members? _____
E10. Is the source of your household income ….. MOSTLY FROM OPERATING A FARM; MOSTLY FROM OFF-FARM SOURCES; EQUAL