

***Proposal for 2008-2009  
Northwest Columbia Plateau PM<sub>10</sub> Project***

**Objective #8:**           **Develop Awareness and Acceptance of BMPs via On-Farm Testing of Improved Technologies in Farmers' Fields**

**Title:**                   ***Direct Seeding and Green Manures in Irrigated Systems for Wind Erosion Management***

**Personnel:**           **Principal investigator: Andy McGuire, WSU Extension;  
Technician: Sally Hubbs, WSU Extension;  
Cooperators: Alan Williamson, Eric Williamson, and Wes Boorman, Dale Gies, and James Freeman, farmers;  
Sam Krautscheid, Krautscheid Consulting, farmer;  
Brian Lewis and Roger Willis, Pioneer Seed Representatives.**

**Project Objectives**

1. To demonstrate, under irrigation, the feasibility of direct seeding corn into wheat stubble and measure the effects on crop yield and soil quality.
2. To investigate the biological crusting resulting from long-term green manure use.
3. To transfer direct seeding technology to irrigated farming regions of the Columbia Basin.

**Recent Accomplishments**

Two demonstration fields have been established and the first wheat crop harvested. Corn will be direct seeded into these fields this spring. The corn planter at the WSU Othello research unit is being modified for direct seeding and will be used by researchers at Prosser as well as the two demonstration fields. The annual High Residue Farming under Irrigation workshop in December 2007 attracted 48 participants.

The Big Bend office of the Natural Resources Conservation Service reports that farmer use of their EQIP funds for no-till/strip-till practices has increased from zero acres in 2004 to 2281 acres in 14 fields in 2007. The actual acres are probably more because farmers generally only contract a portion of their fields with NRCS. High residue farming website hits in 2007 (3307) were more than double those in 2005 (1429) when tracking began. A survey of program participants has been conducted to determine the short, medium and long-term outcomes of program activities. The results will be available later in 2008.

**Planned Research**

**Objective 1:** The corn planter at the WSU Othello research unit is being modified for direct seeding. It will be used to direct seed corn into wheat stubble at two demonstration fields, one in Franklin County and one in Grant County. Spring field days will be held at both sites as well as at WSU Othello to show planter modifications. Crop yield will be measured and a

report on the results will be made available to farmers next fall and winter at various farmer meetings.

On-farm field trials will compare soil temperatures of strip till and untilled soils through the spring growing season. This will be done in two fields, one with fall strip tilling and another with spring strip-tilling. Soil temperatures will be recorded along with crop height. A report of results will be made available in print and on a website.

**Objective 2:** The biological crusting which occurs in fields receiving long-term green manures will be investigated in green house and/or field studies. The effects of nitrogen, water, green manure application, and shade will be the main factors investigated. This will be done through a pot study comparing various treatments on soils amended and un-amended with mustard green manures. This work is contingent on getting use of a nearby greenhouse. If greenhouse use cannot be secured, activities and funds will be shifted to the high residue farming program.

**Objective 3:** Direct seeding and strip-till technology, including the knowledge gained through the on-farm research conducted as part of this project, will be transferred to farmers in the Columbia Basin through the following:

1. High residue farming systems field days. These field days will give farmers an opportunity to see the equipment used in direct seeding and the crops that have been direct seeded. They will also hear the results of on-farm research, observations from cooperating farmers, and direct seeding basics from the local extension educator. Farmers attending this field day will receive the information they need to begin planning the residue management that they will need to do in the fall to prepare for direct seeding the following year. It will also give us the opportunity to hear from farmers what their concerns are with adopting direct seeding systems in irrigated areas.
2. A High Residue Farming under Irrigation workshop. This workshop will assist farmers in learning the latest in high residue farming technology through lectures and equipment displays. Experienced researchers will be brought in from areas where farmers are currently direct seeding in high amounts of residue. They will cover those critical management considerations identified in Objective 1 of this project.