

***Proposal for 2010-2011  
Northwest Columbia Plateau PM<sub>10</sub> Project***

**Objective 8:** **Develop Awareness and Acceptance of Best Management Practices via On-farm Testing of Improved Technologies in Farmers' Fields**

***Project Title:*** ***On-Farm Testing of Cropping Systems Technology to Improve Profitability and Erosion Control in Low and Intermediate Rainfall Areas of Eastern Washington***

**Personnel:** Principal Investigators: **Aaron Esser, WSU Extension;**  
Project Partners: **David Lungren, Lincoln Conservation District Supervisor; Gary DeVore, Adams Conservation District Supervisors;**  
Research/Extension Collaborators: **Hans Kok, WSU/UI Conservation Tillage Specialist, Moscow; Bill Schillinger, WSU Dryland Agronomist, Lind/Ritzville; Joe Yenish, WSU Weed Specialist, Pullman; Frank Young, USDA-ARS Weed Scientist, Pullman; Diana Roberts, WSU Area Extension Agronomist, Lincoln/Spokane Counties, Spokane; Ann Kennedy, USDA-ARS Soil Microbiologist, Pullman;**  
Other Partners/Cooperators: **Wheat Grower and Crop Improvement Associations in Adams and Lincoln Counties.**

**Project Objectives**

Utilize on-farm testing to accelerate the development and grower adaptation of minimum tillage and no-till systems, and more intensive crop rotations that improve profitability, erosion control and soil productivity in low and intermediate rainfall areas of Adams and Lincoln Counties in eastern Washington.

**Recent Accomplishments**

My poster entitled “Hard Red Winter Wheat Feasibility in Comparison to Soft White Winter Wheat” was awarded Finalist in the Applied Research Poster at the National Association of County Agriculture Agents Annual Meeting and Professional Improvement Conference.

A series of on-farm tests over the past five years examining winter wheat (WW) produced in no-till fallow vs. “sweep” fallow is concluding. Results indicate sweep fallow WW yields and economic returns over variable costs equal no-till fallow WW. Sweep fallow also had seed zone moisture levels equal to no-till fallow. Results conclude sweep fallow can be a valuable tool to replace the 3<sup>rd</sup> glyphosate application and improve control of hard to kill weeds. It also minimizes the potential for herbicide resistance without suffering yield or economic losses and maintaining a direct seed conservation system.

Outreach efforts this year focused on controlling wireworms in spring cereal grain production. Over the last year, an estimated 1,000 growers have been reached across the region through multiple invited speaking engagements. Growers have demonstrated knowledge gained in wireworm identification, wireworm damage identification, and have expressed changing wireworm control strategies that include scouting and reconsidering seed applied insecticide rates in their spring cereal grains.

### **Planned Research**

*Winter Wheat –Summer Fallow Systems:* Cropping systems that fail to include fallow as a sequence of the rotation in the dryland low rainfall regions have been shown to reduce profitability and increase production risk. Growers have also reported reduced yields in winter wheat following no-till fallow systems because of delayed seeding because of reduced seed zone soil moisture. An on-farm test will be initiated to build on work examining the feasibility of seeding no-till fallow winter wheat systems earlier than traditional conventional tillage based summer fallow systems when seed zone soil moisture conditions are still adequate for winter wheat stand establishment. This trial will examine multiple seeding dates and potentially two varieties at one location in the dryland cropping region of Adams County, Washington.

Soil compaction can limit water infiltration and reduce grain yields but fall chiseling and or deep ripping remove residue and increase the potential for wind erosion during the fallow period. At LaRitz Farm south of Ralston, WA, multiple on-farm tests have been established examining the advantages of utilizing an Ecolo-til 2500 ripper in the fall to reduce soil compaction and increase soil moisture compared to no ripping. At Knodel and Son Farm east of Lind, WA, an on-farm test has been established examining three treatments; fall Ecolo-til 2500 ripper; traditional fall chisel; and no fall tillage. Data collected will include soil compaction and soil moisture in the spring of the year. Grain yield, quality and return on investment data will also be collected.

Consistent winter wheat stand establishment is critical for minimizing blowing dust, but it has been difficult in the dryland cropping region because of the drier than normal conditions experienced over the past few years. On-farm tests have been established examining seed applied products that may improve stand establishment. The first product being examined is Cruiser®. Cruiser improves plant vigor and protects plants from insects to help get crops off to a healthy and more vigorous start. Two on-farm tests have been established examining winter wheat treated with Cruiser vs. winter wheat not treated with Cruiser. The second product is Zeba®. Zeba is a unique soil amendment that keeps moisture near the seed to improve germination. Two on-farm trials, one in a conventional winter wheat summer fallow system in Adams County and one in a no-till fallow winter wheat system in Lincoln County, have been established examining ‘Eltan’ winter wheat seed coated with Zeba® vs. non coated Eltan seed. Stand establishment, grain yield, grain quality and return on investment data will be collected.

*Spring Cereal Production and Direct Seed Systems:* Spring cereal production remains a vital best management tool for reducing wind erosion and improving air quality. It also remains a vital option to maintain or improve overall farm profitability given favorable market prices. At LaRitz Farm south of Ralston, WA, an on-farm test examining the advantages of utilizing an Ecolo-til 2500 ripper for reducing soil compaction, increasing soil moisture, improving spring wheat yields, and increasing profitability continues. Growers across the dryland cropping region of

eastern Washington have expressed concerns regarding increasing wireworm populations, especially in conservation farming systems. Two on-farm tests have been established examining long-term wireworm control in spring cereal production. These trials are focused on increased rates of seed applied insecticide applications at varied rates and no-till fallow as potential methods to control wireworms.

### **Outreach**

The WSU Wilke Research and Extension Farm field tour continues to be a valuable source of outreach focusing on direct seed systems and crop rotations that prevent or reduce wind erosion. This year the tour will again focus on no-till fallow management, alternative crop production for reduced wind erosion and increased profitability, and wireworm control in conservation farming systems. This will include winter canola and winter peas as potential options for no-till fallow seeding. Grower presentations remain a vital piece of the Lincoln-Adams On-Farm Testing Program as multiple presentations will again be made across the region focused on no-till fallow systems in the dryland cropping region, minimizing soil compaction and maximizing residue, and profitable spring wheat production focused on wireworm control and market class selection.

### **References Cited**