

***Proposal for 2008-2009
Northwest Columbia Plateau PM₁₀ 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 investigator: Aaron Esser, WSU Extension On-Farm Testing Assoc., Adams/Lincoln Co., Ritzville;**
Project partners: David Lungren, Lincoln Conservation District Supervisor; Gary DeVore, Adams Conservation District Supervisor; Research/Extension collaborators: Hans Kok, WSU/UI Conservation Tillage Specialist, Moscow; Rich Koenig, WSU Soil Fertility Specialist, Pullman; 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; Don Wysocki, OSU Extension Soil Scientist, Pendleton; USDA-NRCS Staff in Adams and Lincoln Counties;
Other partners/cooperators: Wheat Grower and Crop Improvement Associations in Adams and Lincoln Counties.

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

Fall nitrogen fertilization application for spring wheat production work was awarded "Second Place Poster Applied Research" 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. conventional fallow is concluding. Results indicate no-till fallow WW seeded early produces yields and economic returns over variable costs equal to conventional fallow WW. Delayed seeding no-till fallow WW reduced yield and economic returns over variable costs compared to early seeded WW produced in both no-till and conventional fallow systems.

Soil compaction problems have been expressed by growers utilizing direct seed annual cropping systems throughout the Lincoln-Adams Extension area. A very intensive on-farm

test was initiated in the fall of 2004 and expanded in 2005 to examine the benefits of using a low soil disturbance ripper (ecolo-til[®] 2500) in comparison to a higher soil disturbance paratil ripper and a no rip control. Preliminary results indicate soil compaction was reduced and grain yield was increased using a low soil disturbance ripper (ecolo-til[®] 2500) in comparison to the no rip control. Differences in available soil moisture were not detected between the treatments.

The Northern Lincoln County 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 was focused on no-till fallow management, alternative crop selection, soil moisture as a tool to improve crop selection and managing herbicide resistant weeds. Grower presentations remain a vital piece of the Lincoln-Adams On-Farm Testing Program as multiple presentations were presented throughout the year. The focus was on no-till fallow management, winter canola and hard red winter wheat profitability compared to soft white winter wheat.

Planned Research

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 Tim and Dennis Herdrick's farm north of Almira, WA, an on-farm test is being developed to compare soft white spring wheat production and hard white spring wheat production. The objective of this research is to develop a tool or mechanism that will assist growers in the decision to plant soft white or hard white spring wheat production given current market prices and fertilizer costs.

Winter Wheat –Summer Fallow Systems: On Rob Dewald's farm northeast of Ritzville, WA, an on-farm trial has been initiated examining phosphorous application in no-till fallow winter wheat systems. The trial has direct seeded winter wheat seeded onto chemical fallow with 0, 16, and 32 lbs. P/ac. Grain yield, grain quality, residue production, and return over costs are going to be collected. This study is building upon work completed by Rich Koenig, WSU Soil Fertility Specialist, and Larry Lutcher, OSU Morrow County Extension.

At Curtis Hennings' farm 15 miles south of Ritzville, WA, an on-farm trial has been initiated examining the winter wheat cultivars feasibility under late seeded chemical fallow conditions. The trial has three varieties that have been described as having early spring vigor ('Brundage 96', 'ORCF 102', and 'Tubbs 06') and 'Eltan' as a control. All four treatments were seeded at 60 and 80 lbs. /ac with a JD 750 direct seed drill on October 19, 2007. Data collection will include stand establishment, tillers per plant, grain yield, grain quality, and overall economic production.

At Rick Brunner's farm 5 miles north of Almira, WA, an on-farm test is being completed examining "Sweep" fallow compared to "No-till" fallow. The objective of this test is to determine if a Flexi-coil cultivator with sweeps running at a depth of 2 inches can replace the 3rd glyphosate application in a chemical fallow system to remove difficult hard to control weeds, increase seed zone moisture and improve grain yield.