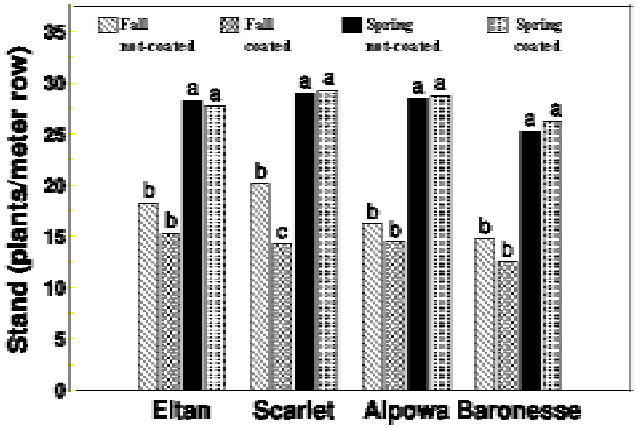

Figure 1a. Stand establishment of four cereal cultivars in 2002 with and without polymer seed coating planted in late fall (dormant seeding) and early spring.

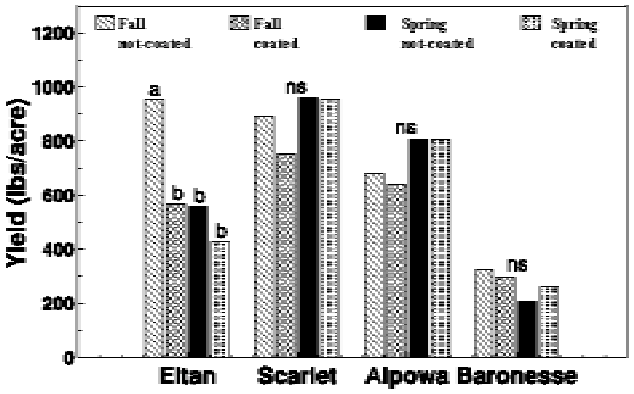

Figure 1b. Grain yield of four cereal cultivars in 2002 with and without polymer seed coating planted in late fall (dormant seeding) and early spring.

*FALL FERTILIZATION FOR SPRING WHEAT PRODUCTION IN DIRECT SEED ANNUAL CROP ROTATIONS

Dennis Tonks, WSU, Extension Dryland Farming Systems Specialist, Davenport,
Aaron Esser, WSU Extension On-Farm Testing Assoc., Ritzville

The objectives of this research are to evaluate the benefits of fall fertilization and the impact on nitrogen movement in soils and the impact on spring wheat establishment, yield, and quality. Two on-farm research projects were initiated in the fall of 2001, one, six miles north of Sprague WA, and the other, five miles south of Lamont, WA both located in the 10 to 12 inch rainfall area. Plot areas were fall fertilized using a low disturbance 'Blue Jet' coulter applicator. Treatments at both locations were fall fertilized with the low disturbance applicator (fall LD), spring fertilized with the low disturbance applicator (spring LD), fertilizer was dribbled on the soil surface (spring dribble), and spring fertilized with high disturbance one or two pass fertilizer/seed system (spring HD).

Nitrogen fertilizer applied in the fall with the LD applicator did not move past the first foot of soil by spring (Figure 1). Cooler soil conditions at fertilization, combined with less than normal precipitation limited nitrogen movement into the profile. There were no significant differences in wheat seedling establishment between the four treatments. At Sprague, wheat yield, test weight and protein were not significantly different between treatments. At Lamont, wheat yield for fall LD was significantly greater than spring LD or spring dribble but not spring HD. The spring HD treatment had significantly greater protein and lower test weight, and the spring

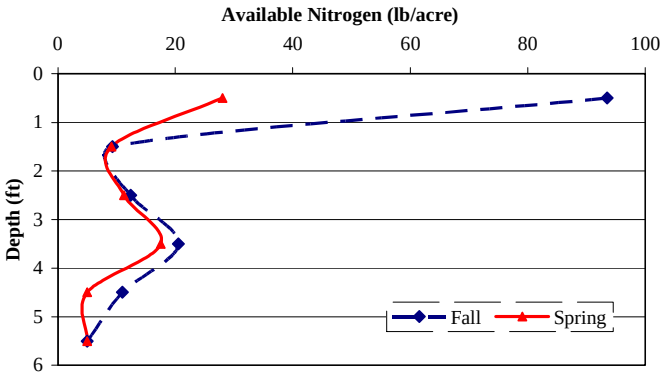

Figure 1. Available nitrogen fertilizer in the spring of the year after fall fertilization and prior to spring fertilization in an on-farm trial near Lamont, WA.

*indicates full article available on the Web: http://css.wsu.edu

dribble treatment had the lowest protein and highest test weight. Protein and test weight for fall and spring LD treatments significantly different.

Results from these two experiments showed that fall fertilization can be a benefit in a direct seed annual cropping system. Given the dry winter in 2001-2002, nitrogen movement into the soil profile was minimal. This is the first year of an on-going project that will be conducted through two more growing seasons to evaluate how this system works under different moisture and temperature regimes.

*WEED DYNAMICS IN AN INTENSIVE DRYLAND CROP ROTATION STUDY

Dennis J. Tonks and Darla J. Rugel, Cooperative Extension, Davenport

Objectives of this project were to diversify crop rotations grown in the intermediate rainfall area of the PNW, promote natural resource stewardship through reduction of wind and water erosion, monitor changes in soil quality parameters, implement of integrated pest management practices and monitor changes in pest populations.

Two crop rotations were initiated in the spring of 1998 at the WSU Wilke Research and Extension Farm near Davenport, WA and on five cooperator's fields within a 30-mile radius of Davenport. The 3-year rotation was winter wheat/spring cereal/broadleaf. The 4-year rotation was spring cereal/winter wheat/warm season grass/broadleaf. Plot size ranged from 8 to 10 acres on the Wilke Farm and from 10 to 100+ acres on cooperator farms. All field operations were performed using grower's equipment. Small grain crops grown in the study included winter wheat, spring wheat and barley; broadleaf crops included yellow mustard, canola, peas, sunflowers, flax, safflower, buckwheat; and warm season grasses included proso millet and corn.

Weed management has been one of the major concerns and costs in transitioning to direct seeding In the three-year rotation, prickly lettuce, prostate knotweed, and wild oat populations decreased. In the four-year rotation, the downy brome population increased and Canada thistle increased in both rotations. Wild oat populations decreased in both rotations, but the decrease was more rapid in the three-year rotation. Averaged over years, the wild oat population was greatest in the spring cereal crop and lowest in winter wheat and the broadleaf crop. Averaged over years, the wild oat population was greatest in the warm season grass. Downy brome populations remained static in the four-year rotation but increased in the three-year rotation.

*OVERVIEW OF THE SPOKANE COUNTY AND NORTHWEST CROPS DIRECT SEEDING PROJECTS

Diana Roberts, Dennis Roe, Dennis Pittmann, Herb Hinman, Roger Veseth

WSU Cooperative Extension teams with growers from Whitman and Spokane counties on two grower-driven direct seeding projects that are funded by USDA-SARE (Sustainable Agriculture, Research and Education). The NRCS, Spokane County Conservation District, Palouse-Rock Lake Conservation District, Palouse Conservation District, Whitman Conservation District, and Pine Creek Conservation District are also partners on these projects.

Northwest Crops Project 2003 is the 6th year of the Northwest Crops Project. The farmer cooperators are comparing a four-year direct seed rotation; winter wheat – warm season grass (corn) – broadleaf - spring wheat with a three-year rotation; winter wheat – spring barley – chem. fallow. The 4-yr rotation includes a warm season grass to provide different windows for