

Performance of Hard Red Winter Wheat in Late-Planted No-Till Fallow

Field Research in the Low-Precipitation Zone

Larry K. Lutcher, Donald J. Wysocki, and Michael D. Flowers

Soft white winter wheat is grown almost exclusively throughout the Pacific Northwest, except in the low-precipitation zone of north-central Oregon and south-central Washington (figure 1). In this region, hard red winter wheat (HRWW) is an attractive option because growers can usually achieve minimum grain protein goals, which increase market value, without applying cost-prohibitive quantities of nitrogen fertilizer. Nitrogen inputs are relatively low because the water stress that occurs during much of the growing season limits yield potential.

The winter wheat–fallow rotation has been the dominant cropping system in low-precipitation areas of the Pacific Northwest since 1890. Tillage is conducted in spring of the fallow year to establish a low-bulk-density surface mulch that retains seed-zone moisture. Subsequent tillage operations maintain the mulch and control weeds. Tilled fallow is often necessary for early planting (late August to mid-September).

No-till fallow is an alternative, but growers' optimism about no-till fallow is tempered by concerns that late planting may reduce grain yields (figure 2). Late planting (October or after the onset of fall rains) is necessary in no-till fallow because seed-zone moisture during early planting dates is often inadequate for uniform germination and emergence.

Yield reductions can be offset, to some extent, by placing the required fertilizer below or beside the seed while planting. Cultivar selection may be equally important for minimizing the yield penalty associated with late planting, and identifying adapted cultivars may lead to increased use of no-till fallow.



Figure 1. Hard red winter wheat production in north-central Oregon and south-central Washington occurs on plateaus and uplands bisected by ravines, canyons, or drainages. Most soils are moderately deep to deep silt loams or very fine sandy loams formed in windblown loess. Precipitation is limited (7 to 10 inches annually), the frost-free period ranges from 140 to 170 days, and summers are dry and hot.



Figure 2. Newly emerged wheat plants in a field planted in late October after 15 months of no-till fallow. This photo was taken on November 12, 2006. Plants reached the 3-leaf stage of growth before going dormant in December.

Larry K. Lutcher, Extension agriculturist; Donald J. Wysocki, Extension soil scientist; and Michael D. Flowers, Extension cereals specialist; all of Oregon State University.

