ABSTRACT

Wind erosion and blowing dust on conventionally tilled winter wheat (Triticum aestivum L.)-summer fallow cropland in eastern Washington, USA, reduces soil productivity and can contribute to poor air quality. Conservation tillage during fallow has long been known to curtail erosion and dust, but conventional tillage is still practiced on over 80% of the cropland in the region. This paper reports the economic results of a 5-yr (1995-1999 harvest years) tillage system study at Lind, Washington. The site averages 244 mm annual precipitation and the soil is a Shano silt loam (coarse-silty, mixed, superactive, mesic Xeric Haplocambids). Tillage systems were i) conventional tillage (CT), ii) minimum tillage (MT, herbicides and tillage), and iii) delayed minimum tillage (DMT, herbicides and delayed tillage). Wheat grain yield across years ranged from 1.79 to 5.20 Mg ha⁻¹, but there were no differences in grain yield among tillage systems in any yr or when analyzed across years. Tillage systems were economically equivalent based on market returns over total production costs, but DMT was significantly less profitable than CT based on market returns over variable costs. Economic analysis indicates that no subsidies should be required to entice producers to switch from CT to MT fallow because the systems are equally profitable. Because there is no short or long-term economic sacrifice for converting to the soil saving MT system, it represents a "win-win" solution for farmers and the environment. A questionnaire is attached to the article to assess students understanding of the facts and concepts presented.