

analyses suggest that P fertilization may also play an important role in C sequestration.

There is a lack of research knowledge concerning the mass of below-ground residue C produced by plant roots from various crops. This information is extremely important when addressing the effects of cropping practices on C sequestration as it is related to concerns about global climate change.

The positive effects of N fertilization on SOC were clearly demonstrated in this long-term dryland annual cropping study under NT conditions. Nitrogen fertilization significantly increased crop residue inputs to the soil, resulting in increases in TSN and SOC after 11 crops. The increase in SOC with increasing N fertilization rate decreased soil bulk density and contributed to improving soil quality. Carbon sequestration efficiency was improved by N fertilization. This study shows that managing NT cropping systems for optimum yield with adequate N fertility will have positive environmental impacts and that N fertilization will enhance SOC accumulation and productivity in the central Great Plains. A good fertility program helps sequester atmospheric CO₂ into SOC by increasing plant growth and, subsequently, returning more organic C to the soil for storage as soil organic matter in a NT system. **BC**

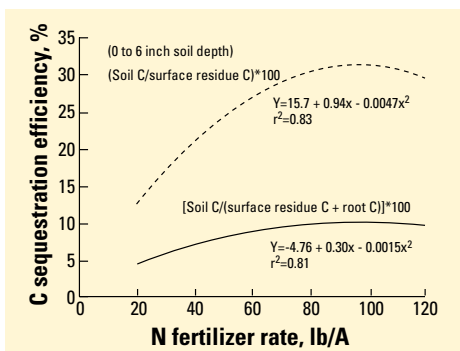


Figure 7. Estimates of C sequestration efficiency in the 0 to 6 inch soil depth as a function of N rate after 11 crop years when considering surface residue C inputs only and surface residue C plus estimated root residue C inputs.

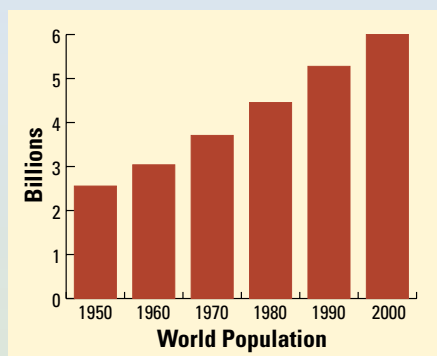
Dr. Halvorson and Mr. Reule are with USDA-ARS, P.O. Box E, Fort Collins, CO 80522. Phone: (970) 490-8230. E-mail: adhalvor@lamar.colostate.edu.

The U.S. Department of Agriculture offers its programs to all eligible persons regardless of race, color, age, sex, or national origin and is an equal opportunity employer.

World Population Reaches 6 Billion

The world's population increased to over 6 billion people on October 12, 1999, according to the United Nations (U.N.). While the population growth appears to be slowing, it is still adding more than twice as many people as were added annually at the middle of the 20th century.

In 1950, world population reached a total of 2.556 billion. The graph shown here tracks the number at each decade since then. While tremendous progress in food and fiber production has eased concerns in many areas of the world, the challenge of improving practices and developing more



efficient crop and soil management systems continues. **BC**