loam soil is hardly consolidated. In fact, it is about average for an undisturbed soil of that texture. In addition, the 10-year-old no-tillage plots maintained a higher average infiltration rate after 15 min of runoff in wheel-tracked areas than either tilled system after a single, four-day-old compaction event.

We are told nothing about conditions the rest of the year, nor the effects of subsequent rainfall and compaction events. What we do know is that a freshly tilled soil, if protected from an implement wheel, has a lower bulk density and slightly higher infiltration rate for the first artificial rainfall event on a microplot of 50 by 100 cm.

We challenge the authors to repeat their measurements of bulk density and infiltration prior to fall tillage. That comparison might be more representative of long-term tillage effects.

Received 9 Feb. 1982.

Agronomy Department
N-122 Agric. Science Building–North
University of Kentucky
Lexington, KY 40546

G. W. THOMAS
R. L. BLEVINS
R. E. PHILLIPS
W. W. FRYE
J. H. GROVE
M. S. SMITH

References


Reply to Comments on “Long-term Tillage Effects on Interrow Runoff and Infiltration”

Concerning our article “Long-term Tillage Effects on Intertrow Runoff and Infiltration” (Lindstrom et al., 1981), we feel that our conclusions are not misleading and that the data presented should be considered when making management decisions about tillage systems for water runoff control.

Our study was started as soon after planting as we could get set up. This is the period when the soil is most susceptible to water runoff from spring thunderstorm activity. The predominant crops raised are row crops. It is correct that the differences in surface bulk density are “hardly surprising” because differences have been measured many times. However, the differences measured may have an influence on runoff. Burwell and Larson (1969) report that soil porosity as a single entity can account for 50% of the variation in rainfall energy needed to initiate runoff. They also determined that random roughness could account for 90% of the variation in rainfall energy needed to initiate runoff from our tilled nonwheel-tracked interrow. The random roughness for all treatments was determined that random roughness could account for 90% of the variation in rainfall energy needed to initiate runoff from our tilled nonwheel-tracked interrow. The random roughness for all treatments was 2.2 to 3.7 cm when the random roughness averaged 2.2 cm and 0.3 cm when the random roughness averaged 2.2 cm. As planting equipment increased in size from 4-row to 6, 8, 12, or 20 rows, the proportion of wheel-tracked surface decreased and the damage to the soil surface from tractor wheels during planting must be considered. We feel that the no-till nonwheel-tracked areas are the weakest link in the tilled system, but we suggest that you compare this weak link with the results we did not follow infiltration throughout the year. In this regard, we agree that the deterioration of the no-till nonwheel-tracked areas is a relative term, but bulk density was related to the other treatments, no-till vs. tilled soil surface. In our study we encountered a no-till day, soil that rapidly produced runoff in wheel-tracked and no-wheel-tracked interrows after a long infiltration after 30 min of runoff. The 50% cover (100% cover, approximately 11 metric tons/ha) would effectively intercept the energy of raindrops; therefore, we feel that the rapid runoff observed can be attributed to the surface condition maintained during 10 years of no-till management. Additional measurements beyond bulk density may more completely characterize the condition of our study, we feel confident in concluding that no-till is susceptible to runoff from spring and summer thunderstorms. We did not follow infiltration throughout the year and, in our study, we feel confident in concluding that no-till is susceptible to runoff from spring and summer thunderstorms.