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Dryland Corn Development Under Various Tillage Systems

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Dryland Corn Development Under Various Tillage Systems. W. W. Wilhelm, USDA-SEA-AR, Lincoln, NE.

Corn (Zea mays L.) was grown under dryland conditions in eastern Nebraska to study the influence of tillage practice on plant development and leaf growth characteristics during 1977, 1978, and 1979. Tillage practices used in these experiments were plow, disk, chisel, and no-till. All tillage operations were applied during the spring of each cropping season. Green leaf area increased from emergence through tasseling and then decreased slowly until physiological maturity for all treatments. The maximum green leaf area indices (LAI) averaged 2.14, 2.56, and 1.89 for 1977, 1978, and 1979, respectively. There was no significant tillage treatment effect on leaf area or LAI. Leaf area duration (LAD) averaged 23.5, 15.2, and 10.8 days for 1977, 1978, and 1979, respectively. During 1977, the disk treatment had a higher LAD than the no-till treatment. Relative leaf area growth rate (RLAGR), relative growth rate (RGR), leaf area ratio (LAR), and net assimilation rate (NAR) did not differ among the treatments. Grain yield averaged 1,721, 4,999, and 6,422 kg/ha in 1977, 1978, and 1979. No significant differences were found among the tillage treatments during 1977 and 1979; however, in 1978, the plow and disk treatments produced more grain than the chisel treatment.