Measured Water Balance of a Fallow Period in the southern Great Plains. (A03-tolk065728-Poster)

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Abstract:

Drainage can decrease water use efficiencies in semi-arid regions, but can also recharge declining aquifer supplies. We measured drainage, evaporation, and precipitation of a fallowed weighing lysimeter containing a monolithic core of Pullman clay loam (fine, mixed, superactive, thermic Torretic Paleustoll) for 603 days from 1995 to 1997. The lysimeter was 3 m by 3 m and 2.3-m deep. The drainage system maintained a constant pressure of -10 kPa. For the total period, the lysimeter received 801 mm of precipitation, of which 107 mm drained and 570 mm evaporated. Drainage began on day 335 of the fallow period, following a 95-day period with 358 mm in precipitation and 194 mm of evaporation. During that period, 75 mm of precipitation fell 7 days before drainage began. The lysimeter drained for 162 days, during which it received 137 mm of precipitation, 128 mm evaporated, and 42 mm drained. The maximum daily drainage amount of 11.5 mm for the total fallow period occurred 7 days following a 2-day rainfall event of 107 mm on days 568 and 569. From days 570 to 603, the lysimeter received 78 mm of precipitation, 62 mm drained, and 85 mm evaporated. Drainage may be an important component of the water balance of the Pullman clay loam in periods of high precipitation.

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