

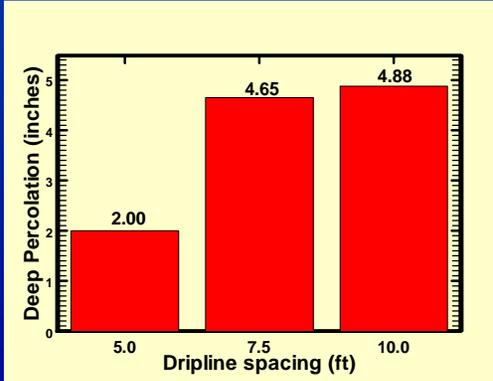
Spacing of Driplines for Corn Production

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Primary factors determining optimum dripline spacing are:

- water redistribution from dripline
- seasonal precipitation
- soil type
- dripline flow rate
- year-to-year corn yield stability
- dripline costs and corn prices

Water redistribution was significantly affected by dripline spacing. Wider spacings did not uniformly redistribute water in the horizontal and vertical directions. Crop yields were affected and deep percolation below the crop root zone more than doubled when dripline spacing increased from 5 to 7.5 ft or 10 ft. Deep percolation reduces irrigation efficiency and also increases potential for leaching agrochemicals.



Crop failure for 10 ft. spacing.



In wetter seasons or climates, wider dripline spacings might be adequate as precipitation provides a larger fraction of the crop water needs.

Soil type will also influence vertical and horizontal redistribution of water. Clay soils or soils with clay lenses or layering might allow wider dripline spacings to perform adequately.

Higher dripline flowrates might also result in more horizontal water redistribution but might also cause "surfacing" of the water or deep percolation, both undesirable effects.

In this two-year study, corn yields for the wider spacings were acceptable in the first year of the study (1990) but were significantly reduced in 1991 following a dry winter with little off-season soil water recharge through precipitation.

Corn grain yields, bushels/acre, at KSU-NWREC, Colby Kansas			
Spacing, ft	1990	1991	Average
5.0	224	208	216
7.5	225	183	204
10.0	217	171	194

Economic analysis has shown that the 5-ft dripline spacing is most economical for corn planted in 30-inch rows with current dripline and corn prices.

Concluding Statement

A 5-ft dripline spacing is recommended for corn grown on the deep silt loam soils of western Kansas. This spacing provides the best economic returns and does not result in excessive deep percolation as does the wider 7.5 and 10-ft spacings.