K-State's Permanent Bed System for SDI

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K-State has generally adopted a permanent bed system for it's subsurface drip irrigation (SDI) research studies with field corn instead of conventional flat planting. The 1.5 m (5 ft) permanent beds are constructed prior to installing the SDI system. The SDI systems are installed at a depth of approximately 40-45 cm (16-18 inches) with a 1.5 m (5 ft) spacing between dripline laterals. The 76 cm spaced (30 inch) corn rows are planted on the raised beds so each dripline lateral is centered between two rows (Figure 1).

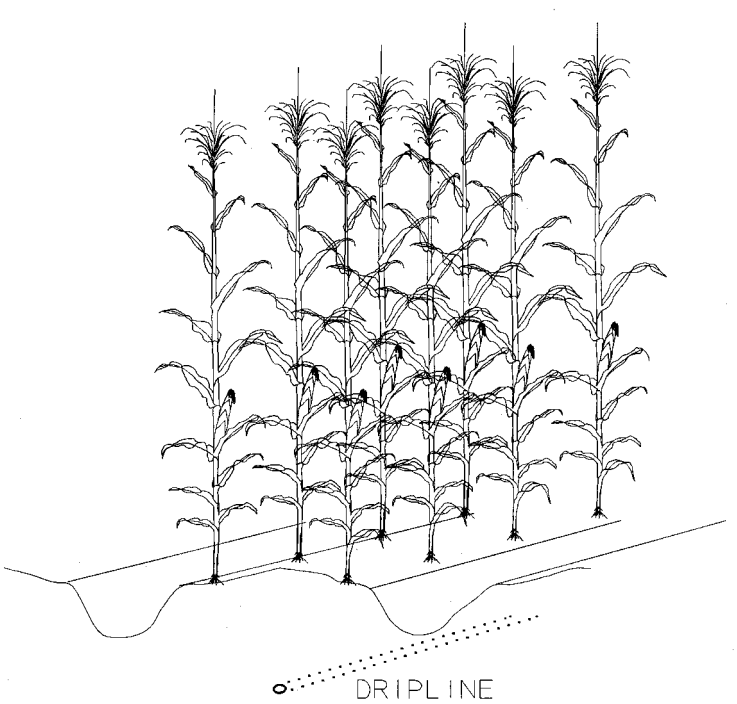

Figure 1. Physical arrangement of the subsurface dripline in relation to the corn rows.

Although K-State does not have any scientific research to validate the importance or significance of this permanent bed system to SDI utilization for row crops, there are some logical reasons why K-State has used this planting system:

- Reduced compaction in crop row location.
- Reduced upward movement of soil water since there is more porosity and less compacted soils above the dripline. This helps to reduce evaporation from soil surface and also to reduce weed germination.
- Controlled traffic in the compacted furrows helps stimulate more root development in the less dense bed where SDI system can provide both water and nutrients.
- Bed system helps to precisely manage crop row location with respect to dripline. Each crop row is maintained within 38 cm (15 inches) of the nearest dripline.
- Allows reduced tillage systems.
- Often results in drier, well drained seedbed and firmer traffic lanes at planting.