Slope Considerations for SDI

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Topography can complicate system design and may limit feasibility of SDI.

Whenever possible, dripline laterals should be installed downslope on slopes of less than 2%.

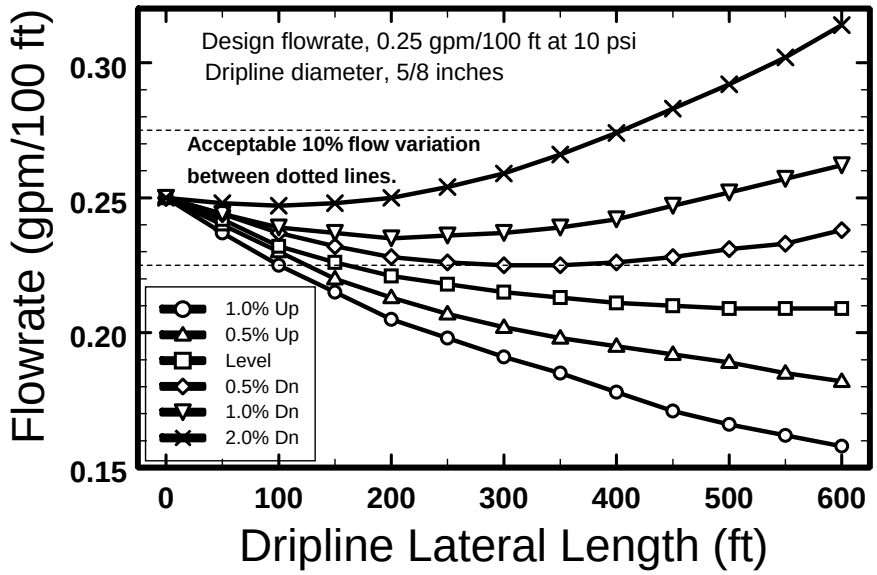

Figure 1. Calculated dripline flowrates as affected by slope. In this example, the 0.5 and 1.0% downslope dripline laterals meet the desired criteria of maintaining flow variations less than 10%. Note: This graph is for conceptual purposes. Some driplines might allow longer lengths of run.

Pressure changes along the lateral of approximately 20% will typically result in flow changes of approximately 10%. A 10% flow change is a general rule of thumb for an acceptable maximum flow variation along the lateral.

On steeper terrain, the driplines should be installed along the field contour and/or techniques for pressure control should be employed.

Pressure compensating emitters can be utilized for pressure control, but are generally more expensive which may limit use of SDI for commodity type crops (e.g. corn, soybeans, wheat)

Shorter lateral runs can also aid in pressure control but will decrease zone size and increase the overall number of zones.

The presence of field slope may also cause inadvertent backsiphoning when the SDI system is shutdown. Checkvalves, air vents, and vacuum breakers may be required at various points in the SDI system to prevent back-siphoning of chemically treated water into the water supply and also to prevent ingestion of soil into the driplines at system shutdown.

Undulating slopes can present problems in economical prevention of backsiphoning into the dripline laterals and may limit application of SDI if the backsiphoning hazard is great.