

Adapting subsurface drip irrigation system to deficit irrigation

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Abstract. Subsurface drip irrigation (SDI) is a type of drip irrigation with buried pipe lines so that water is applied directly to the root zone and under soil surface. SDI systems have high application efficiency but need high technology for installation and are, thus, costly. SDI is relatively new to Colorado and mainly used for vegetables. As a costly system its use is still limited. Moreover, Colorado's water law does not support on farm water savings therefore the efficiency of these systems is not interesting from farmers' point of view. However, it is compatible with automation so that timing and volume of water application can be controlled with great precision. SDI provides a good opportunity in times of water scarcity when deficit irrigation is inevitable.

Drought in a river basin increases the value of water and farmers can benefit from selling part of their water to other water users. The remaining water is normally not enough for fully irrigating the crops so this practice is called deficit irrigation. Reduced yield due to water deficit can be predicted using crop water production functions; however, it is essential to control water application precisely so that the predicted yield is guaranteed. This talk will explore the opportunities that SDI provides for practice of deficit irrigation.