# CO652.1005 State Supplement

## (a) Irrigation Water Management Plan

Irrigation Water Management (IWM) plans are needed to provide the operator with basic information about the application, operation, and maintenance of their system. There are example plans contained in this chapter with blank copies of the IWM form in Chapter 15.

Colorado has a spreadsheet, CO449_JS_1, which is available for download and installation as a .zip file. The soil, crop, and system information can be loaded into the spread sheet with a summary of the system, crop water use, and other operation information displayed.

Irrigation plans are not static documents. A plan should realistically inventory the physically available components and adjudicated irrigation water that can be applied to meet crop needs. The plan documents the decisions made by the landowner as to what crops are involved, how soil moisture and/or evapotranspiration will be monitored, and how irrigations will be planned and regulated. Records of these decisions should be kept to allow analysis of the effectiveness of these decisions, so that the system can be changed to best meet the goals of the landowner.

Soils have a limited amount of irrigation water they can hold. Ideally, the soil profile should be full prior to, or soon after planting the crop. Once the management zone of the soil profile is full, any additional water applied either runs off or moves beyond the root zone of the crop. An IWM plan should document a landowner's understanding and commitment to apply the water needed by the crop or to refill the soil profile to the planned rooting depth. Successive irrigations need only replenish soil depletions. Leaching fractions, where needed, should be timed to minimize the movement of available nitrate in the soil profile.

For surface irrigation systems, plan flow rates in the furrows and borders that are as efficient as practical. Land slopes for furrows should be as uniform as possible, and the length of run for furrows should be appropriate for the slope and soil texture. Irrigation techniques such as irrigating alternate furrows or cutback irrigations may be needed. Surging irrigation may improve uniformity.

In sprinkler systems, droplet energy should be mitigated to prevent soil sealing and surface movement of applied water. This may include planning to leave adequate residue on the field from the previous year to intercept droplets. The speed of the sprinkler should be as slow as practical to allow drying of the soil surface and allow for optimal intake rates and optimal surface structural stability. The optimal intake rate for any soil always occurs when the soil has been allowed to dry for several days. Plan to return pivots operated as wipers and siderolls to the original starting position before beginning to irrigate again.

### (b) Soil Moisture Monitoring

There are several methods available to monitor soil moisture. The purpose of monitoring is to determine when to irrigate the soil based on how the crop has used water. Although the water use rate by the crop varies daily depending on a host of variables that can be calculated, the monitoring of the soil is a fairly common and accurate method of scheduling irrigations.