

## ***MANAGING RICE WITH LIMITED WATER***

During drought years water deliveries are often restricted. If that is the case, then “what is the least amount of water I can grow rice with without hurting yields?”. Based on past studies, the amount of water delivered to rice fields varies widely (i.e. 4 to 7.7 ft). Of this, evapotranspiration (ET) is roughly 34 inches; percolation in most soils is less than 0.3 ft (due to heavy clay soils & impermeable hard pan); seepage ranges from 0-1 ft; and tail water drainage is 1-4 ft.

1. ***Don't spill.*** The values above suggest that rice can be grown using roughly 4 ft of water if there is no tailwater drainage. This could even be less depending on the percolation and seepage characteristics of the field. With no-spill practices, yield can be maintained as long as you receive relatively clean water (low salinity) and the soils are not saline.
2. ***Don't drain at the end of the season.*** Most growers pull their boards at the end of the season to drain the field in preparation for harvest resulting in significant tailwater drainage losses. Instead, growers should attempt to turn off irrigation before needing to drain and allow the water to naturally subside rather than drain the field. Determining when the irrigation water can be turned off depends on how much water is in the field, climate, and soil properties (percolation and seepage). Fields with heavy clay soils can safely have no standing water 21 to 24 days after 50% heading without risking yield loss and grain quality.
3. ***Fallow fields that require more water.*** If fields need to be fallowed due to limited water availability, fallow fields with high percolation/seepage potential or high salinity (no-spill water management makes salinity problems worse).
4. ***Short duration varieties.*** Choose shorter duration varieties which reduce the time period the field has to be irrigated. Shortening the period of irrigation can reduce ET by a couple of inches as well as reduce percolation and seepage losses. Rice typically needs to be flooded from planting to reproductive stage 7 (R7, when one kernel on the main panicle is yellow; about 3 weeks after heading).
  - a. On average to reach R7, CM-101, M-104 and S-102 require 100 days; M-206 requires 104 days; M-202 and M-205 require 108-112 days; and M-401 requires 128 days.
5. ***Avoid early plantings.*** Planting early increases water use because it is during a cooler time of the year. Thus, time to canopy closure and the period the crop needs to be irrigated increases along with the increased potential for higher ET and percolation/seepage losses.
6. ***Dry- versus water-seeding.*** While it may seem counter intuitive, dry/drill seeding does not necessarily require less water than water-seeding. Dry seeding can use less water if rice seed is planted to moisture which reduces the need to flush the field in order to germinate the seed.

For more on this topic a video presentation has been prepared and is available on the Drought page at UC Rice On-line: [ucrice.ucdavis.edu](http://ucrice.ucdavis.edu).