

Using Variable Rate Irrigation to Determine Optimal Irrigation Schedule for Aerobic Rice Production

Earl D. Vories, William E. (Gene) Stevens

Abstract.

Because almost all US rice is produced with continuous flood irrigation, little information addresses irrigation scheduling for rice; however, successful production of rice without a continuous flood will require timely irrigation. A field study was conducted at the University of Missouri Fisher Delta Research Center Marsh Farm during the 2013 and 2014 growing seasons to investigate sprinkler irrigated rice. The study was set up in a split plot arrangement with three replications. Whole plot treatments were two irrigation timings (MAD1, MAD2) and subplot treatments were three variable rate irrigation (VRI) % application settings. The growing seasons had similar temperatures; however, 2013 had more rainfall. Seven fewer irrigations were applied to the MAD2 plots in 2013 but the larger applications resulted in similar total application amounts. Neither main effect was significant for yield but there was a significant interaction. The % application main effect was significant for irrigation water use efficiency (IWUE) and there was a significant interaction. Eleven fewer irrigations were applied to the MAD2 plots in 2014 but the larger applications again resulted in similar total application amounts. Neither main effect was significant for yield, nor was the interaction. The % application main effect was significant for IWUE; however, there was no significant interaction. Although the findings suggest that sprinkler irrigated rice performed equally well under a range of irrigation management, problems were encountered during the study and additional research is needed to validate these trends and develop improved guidelines for producers.

Written for presentation at the Emerging Technologies for Sustainable Irrigation.

A joint ASABE / IA Irrigation Symposium

Long Beach, California, November 10 – 12, 2015