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Benefits and challenges of alternate wetting and drying in rice systems.

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Agriculture is increasingly under pressure to produce more and produce a healthier product; while at the same time limiting negative environmental impacts. Rice systems, which provide more calories for human consumption than any other crop on earth, have high greenhouse gas emissions and water use relative to other crops. Alternate wetting and drying (AWD) irrigation management, which introduces aerobic cycles during the growing season has the potential to reduce both GHG emissions and water use – along with other benefits such as reduced grain arsenic (As) concentrations and positively affecting mercury (Hg) cycling. Based on research conducted in the US and Europe as well as a meta-analysis, we will discuss how to manage water in rice systems to reduce water use, GHG emissions, and grain As and Hg concentrations. Importantly, we will also discuss some of the challenges and limitations of implementation and identify regions where adoption of AWD may be feasible.