

How Crop Arrangement can extend the Life of the Ogallala Aquifer

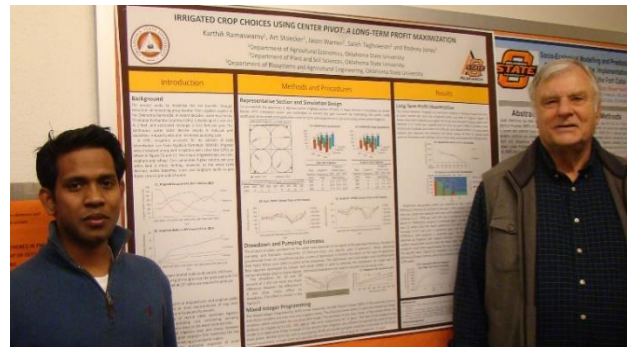
By Abu Mansaray and Kevin Wagner



Irrigation for annual profit maximization (APM) is a predominant farming practice in the U.S. In the Great Plains Region, there is concern that this strategy is not sustainable due to declining water levels in the Ogallala Aquifer, the only groundwater source in the area. Long-term profit maximization (LPM) could be a better strategy.

Oklahoma farmers are interested in LPM; however, they are concerned that the water they save could be used by someone else. This is a major barrier to greater adoption of this strategy. Karthik Ramaswamy, a PhD student at Oklahoma State University, evaluated various LPM scenarios to determine what percent of groundwater saved would be retained by farmers using LPM strategies.

Karthik was among the first batch of students ever to receive an Oklahoma Water Research grant (formerly known as the USGS 104(b) grant) for student research through the Oklahoma Water Resources Center in 2017. The late Agricultural Economist, Dr. Art Stoecker, previously advised Karthik's PhD research. Dr. Jason Warren, a soil and water conservation expert, is now advising his work.



Karthik Ramaswamy and the late Dr. Art Stoecker

Karthik found that even the smallest farm size assessed (1 square mile) would retain 82% of the groundwater saved by implementing LPM strategies. When the area implementing LPM increased in size to 9 square miles, 87% of the groundwater they saved was retained and available for future use. This approach could prolong the life of the Ogallala Aquifer, while ensuring profitability for farmers.

For more information on this 2017-funded project, its funding source, and hurdles to implementation, please visit <http://water.okstate.edu/projects>.