

This article will provide an introduction to agriculture and water use. Agriculture use of water results in two environmental aspects: agricultural water pollution and aquifer depletion. As climate change and perennial drought continue to affect the world, it is only a matter of time until water could become the new oil. Agricultural water rights have always been a hot topic.

Agricultural water pollution is a non-source point pollution caused by runoff or seeping through the soil into the ground water. Groundwater contamination results when man-made products including gasoline, oil, road salts and other chemicals enter the groundwater and causes it to become unsafe and unfit for human use. Pesticides and fertilizers used in agriculture can find their way into ground water by moving through the soil and ending up in groundwater. Both pesticides and fertilizers can also run off of agricultural land during rain events running into rivers, creeks, canals, or lakes. The Finger Lakes and Canal System in upstate NY during the early 70's experienced algae blooms resulting from run off of fertilizers from the vineyards and other farm lands as well as use of phosphates in detergent. Reduction of phosphates in detergents, and programs to reduce run off from agricultural lands were implemented to reduce algae blooms.

The other aspect is the use of aquifers for irrigation of farm land. Aquifers are being depleted. Primary a concern in the west, but the Midwestern states are also experiencing depletion of aquifers. David Steward, professor of civil engineers and colleagues at Kansas State University in a recent publication found that if current irrigation trends continue, 69 percent of the groundwater stored in the High Plains Aquifer of Kansas will be depleted in 50 years. But immediately reducing water use could extend the aquifer's lifetime and increase net agricultural production through the year 2110. The study investigates the future availability of groundwater in the High Plains Aquifer -- also called the Ogallala Aquifer -- and how reducing use would affect cattle and crops. The aquifer supplies 30 percent of the nation's irrigated groundwater and serves as the most agriculturally important irrigation in Kansas. Water battles have long been a very active battle in agriculture.

Additional Reference on Water and Agriculture:

Steward DR, Bruss PJ, Yang X, Staggenborg SA, Welch SM, Apley MD. Tapping unsustainable groundwater stores for agricultural production in the High Plains Aquifer of Kansas, projections to 2110 Proc Natl Acad Sci U S A. 2013 Sep 10; 110(37):E3477-86.

Managing Agricultural Water Impacts <http://wingolog.org/writings/water/water.pdf>

Grace Communication Network Water and Agriculture <http://www.gracelinks.org/1341/water-and-agriculture>