THE WESTERN WATER CRISIS: CONFRONTING PERSISTENT DROUGHT AND BUILDING RESILIENCE ON OUR FORESTS AND FARMLAND

TESTIMONY

Presented to:

Senate Agriculture Subcommittee on Conservation, Climate Change, Forestry & Natural Resources

Tuesday, June 7, 2022

328A Russell Senate Office Building
Washington, D.C. 20510

Presented by:

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Thank you Chairman Bennet, Ranking Member Marshall, and Members of this Subcommittee for the opportunity to speak in today's hearing on the Western Water Crisis. My name is Tom Willis and I am a farmer in Southwest Kansas. It is an honor to discuss the ways the agriculture industry on the Southern High Plains is managing, conserving, and extending the life of our water resources, particularly the Ogallala Aquifer, in this important production region. I also want to express my appreciation to Senator Marshall for his leadership for Kansas agriculture throughout his time in Congress.

I own and operate T&O Farms in Seward, Finney, and Meade Counties Southwest Kansas. I farm alongside with my son, Joshua, and we grow primarily corn, wheat, soybeans, sorghum, and triticale as well as a cattle operation on 7,500 acres.

I also serve on the board of the National Sorghum Producers and Growth Energy. I am in the value added business as president and CEO of Conestoga Energy, which operates two ethanol plants currently, one in Garden City, Kansas and one in Liberal, Kansas. Altogether, we produce 180 million gallons of renewable bio-ethanol and high quality alcohol, distillers' grains and feed products produced from 60 million bushels of locally-sourced grain—if possible—adding value to farmers' crops. This growing region is unique and it requires farmers to plan extremely carefully to mitigate enhanced risks due to limited water resources.

The High Plains is a harsh climate with precious little rainfall. Add in the heat of the Southern High Plains above ground, and what little rainfall we are blessed with may not stick around as long as it would in cooler latitudes. We continue to see erratic weather patterns with the variability of precipitation becoming increasingly volatile. This volatility is producing longer and more extreme droughts across the Western United States and when rain events occur, they are fast and heavy.[1] According to the U.S. Drought Monitor, my county in Southwest Kansas has been in the most severe extreme-to-exceptional drought categories since January of this year.[2]

Alternatively, below ground, many farmers throughout the High Plains have had the luxury of using the region's aquifer, specifically the Ogallala, to pull up water resources and irrigate their crops. Unfortunately, the Ogallala underneath the Southern High Plains is on an unsustainable, rapidly depleting trajectory. However, voluntary conservation methods, collaborative conservation partnerships, and resource conserving crop rotations are helping to preserve those water resources for both agricultural and municipal needs.

The truth is we cannot grow high yielding corn with half the water. That is why sorghum is a key tool for enhancing the overall sustainability and profitability of my farm. Sorghum, the Resource Conserving Crop™, is a drought tolerant, non-fragile, high-residue crop that conserves soil moisture and prevents soil erosion. Intensifying typical high input crop rotations with sorghum can even allow the entire rotation system to become resource conserving, according to the USDA.[3] Despite the harsh and fragile nature of the High Plains, this region still produces three-fourths of the entire sorghum crop in the U.S.

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[1] https://kwo.ks.gov/docs/default-source/governor's-water-conference/2021-conference/doug-kluck-presentation.pdf?sfvrsn=59cb8014_4

[2] https://droughtmonitor.unl.edu/

[3] https://www.regulations.gov/document/CCC_FRDOC_0001-0413

As farmers may look to expand crop and ecosystem diversity, we must also look to the future of farming through new technologies and improved practices tailored to the region. In addition to precision planting, chemical, and nutrient application, I employ cutting-edge—and sometimes experimental—precision irrigation technologies to do my part in preserving the life of the Ogallala. When used in tandem with drought tolerant crops like sorghum, these technologies enable my farm to maintain overall profitability while using less water. I have made a commitment to sharing my experience utilizing these water conserving technologies broadly by being one of the first Water Technology Farms above the Ogallala Aquifer in Kansas to showcase what these technologies and the crop can do. These water technologies on my farm were funded in part by the State of Kansas. I took the initiative to adopt water technologies early on, primarily because I want to prove that we can conserve water and still achieve profitable yield. But also, I want to pass this farm onto my son, now that he has returned from active duty military service. I believe that because of these two priorities – economic sustainability and multi-generational ownership - that agriculture producers have an obligation to current and future generations to be the best stewards of our land and water.

The best production decisions are informed decisions, and farmers are not short-handed in advanced technologies to support these informed decisions. My farm has a total of 12 irrigation pivots enrolled in the Water Technology Farm program. I also have an index well operated by the Kansas Geological Survey at the University of Kansas on my ground that monitors the static groundwater level on a real-time basis to help characterize local aquifer conditions, as well as a Mesonet weather station operated by Kansas State University that monitors temperature, precipitation, humidity, and wind velocity. In my fields, we utilize soil moisture probes to indicate when and how much to irrigate the crops to maintain plant health and growth. We have retrofitted our irrigation systems to reduce water loss through evaporation, with technologies such as bubblers and mobile drip irrigation and others In addition we use telemetry technology that allows us look underground in real time to see how our irrigation practices are impacting the aquifer.

I also participate in the State of Kansas Water Conservation Area, or WCA program, which allows a water right owner in a designated area to develop an approved management plan developed by a with the consent of the Chief Engineer to reduce water withdrawals while maintaining economic value via water right flexibility. Some of the flexibilities WCA participants include the ability to multi-year water usage allocations, the ability to move allocations between enrolled water rights, and allowance for new uses water. I have participated in this Kansas WCA program since 2016, achieving a cumulative water savings of 8,887 acre-feet since my initial enrollment through participation in this program along with utilizing irrigation technologies and relooking at my crop rotations which allow for informed water management resulting in overall water conservation. State programs can offer valuable flexibility that farmers in this region require. As you can see, the agriculture sector has put great time and effort into keeping pace with technology advances, and this data allows farmers to respond to both market and environmental changes.

There is not, however, a federal component to my water conservation efforts. We do not use Environmental Quality Incentives Program (EQIP) or Conservation Stewardship Program (CSP) technical or financial assistance, which have been shown to have a number of regulations and reporting requirements which are not conducive to wide utilization across the High Plains region in Kansas. Increased opportunity for regional input to be accounted for in program implementation guidance could

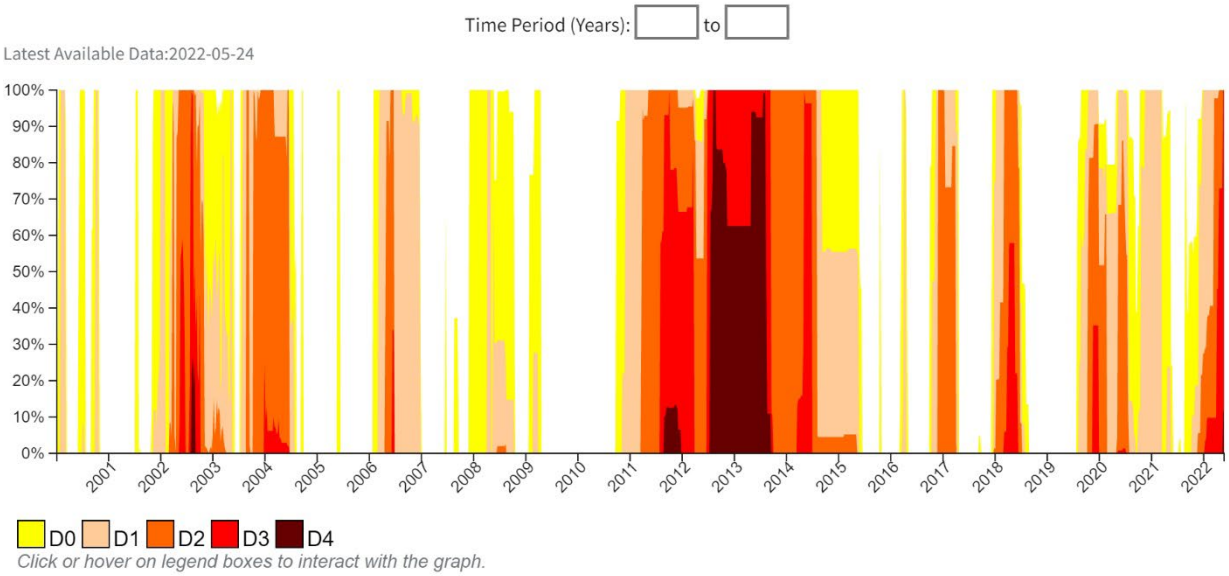
provide an opportunity for increased utilization of these types of federal programs to be utilized while recognizing the regional variability and realities of agricultural production on the High Plains.

These water conservation technologies have come at a cost. These state and local private-public partnerships did help with some of the initial equipment installation – typical of early technology adoption – but I have also been in position to purchase moisture probes and other instruments on my own. At a time when agriculture input costs like fertilizer and machinery are skyrocketing, farmers like myself are scrupulous in considering input costs and reducing those costs to the best of our ability using the best available tool and resources to do so. My experience demonstrates that these technologies help to preserve the Ogallala Aquifer which is necessary to continue my operation into the future.

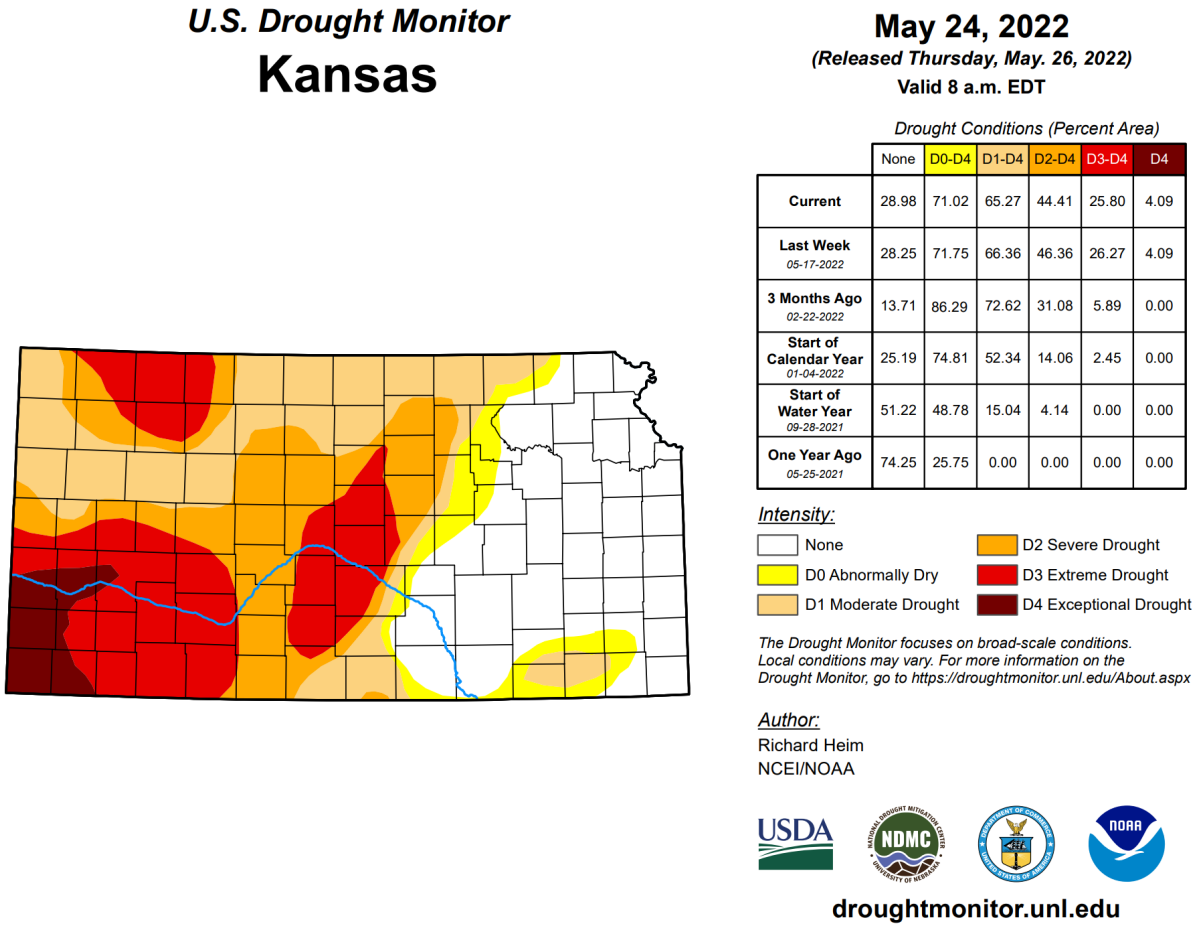
As a farmer on the High Plains, my vision is to make agriculture more sustainable so that future generations can have the same opportunities we have while continuing to do so in a value added and profitable way. The other witnesses on this panel study ground water levels and watersheds. My expertise is agricultural production and commodity markets. But my livelihood and legacy – as are my son's and his son's too, if they decide to stay – are absolutely dependent on a stable water supply. Mr. Chairman, we can do this by adapting new technologies, improving practices and policies, and harnessing the inherent attributes of drought resilient crops, like sorghum. I thank you and the Subcommittee for your time and serious consideration of this critical issue. I am happy to take your questions.

2000 - Present (Weekly)

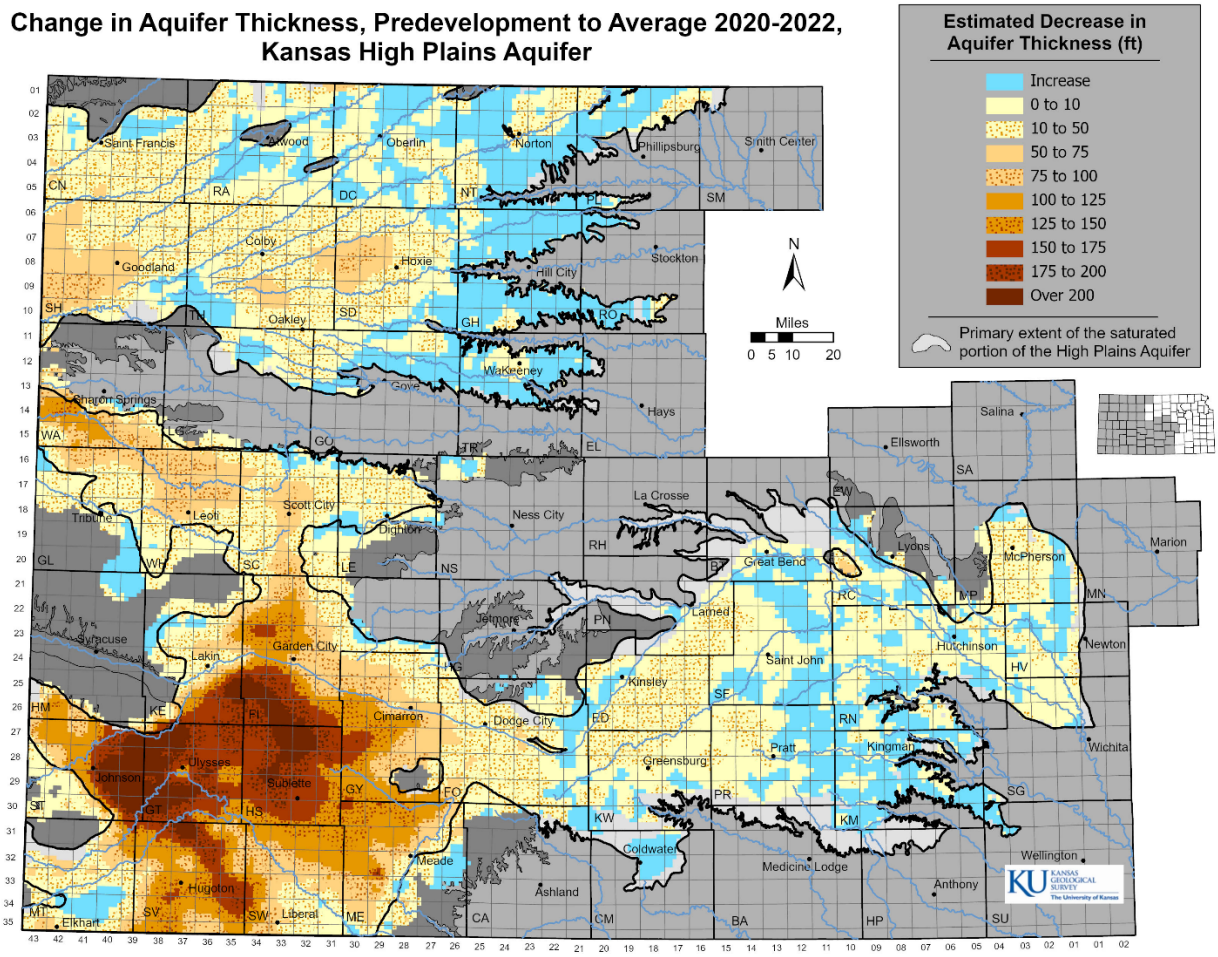
The U.S. Drought Monitor (USDM) is a national map released every Thursday, showing parts of the U.S. that are in drought. The USDM relies on drought experts to synthesize the best available data and work with local observers to interpret the information. The USDM also incorporates ground truthing and information about how drought is affecting people, via a network of more than 450 observers across the country, including state climatologists, National Weather Service staff, Extension agents, and hydrologists. Learn more.



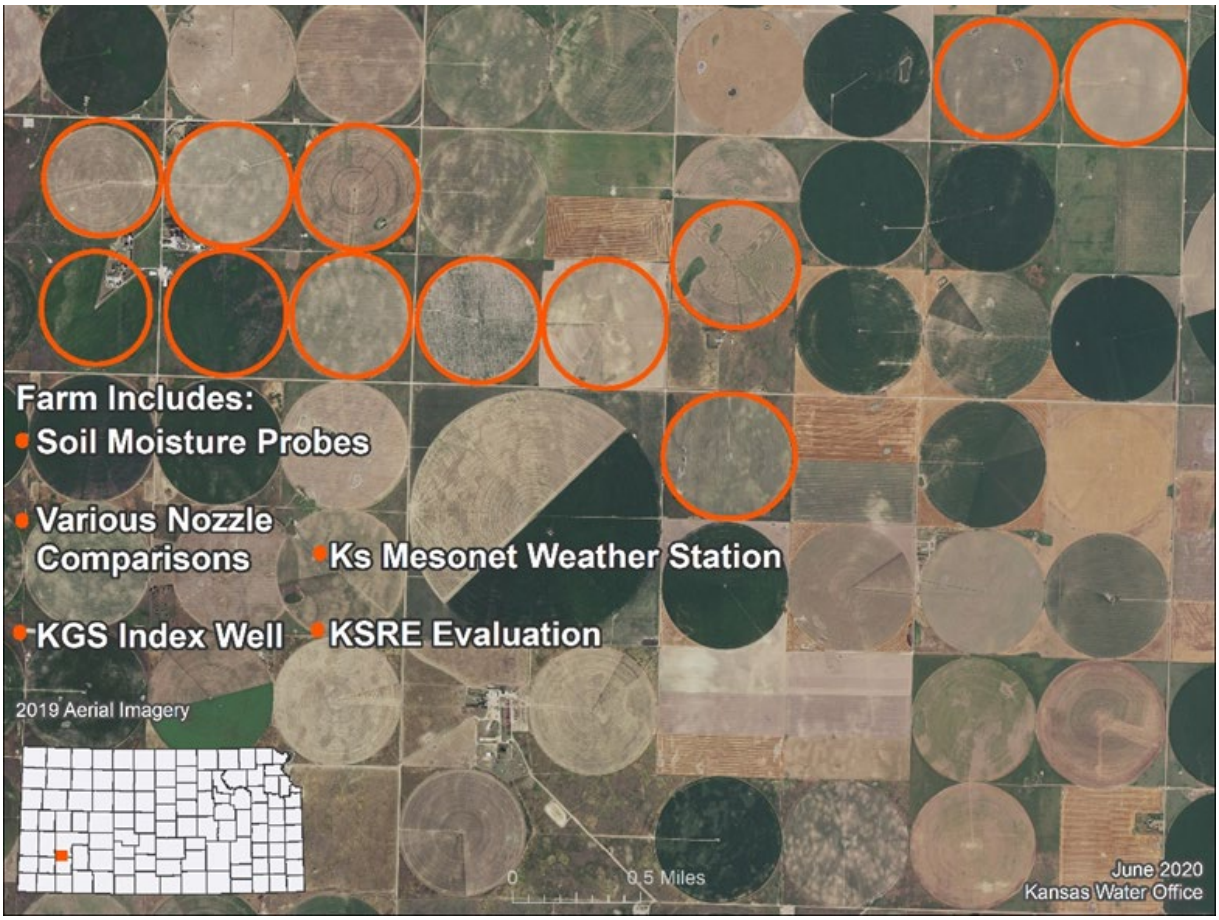
Summary of Drought Conditions, 2000 through 2022 for Finney County, KS. Data from https://www.drought.gov/states/kansas/county/Finney.



U.S. Drought Monitor for Kansas.

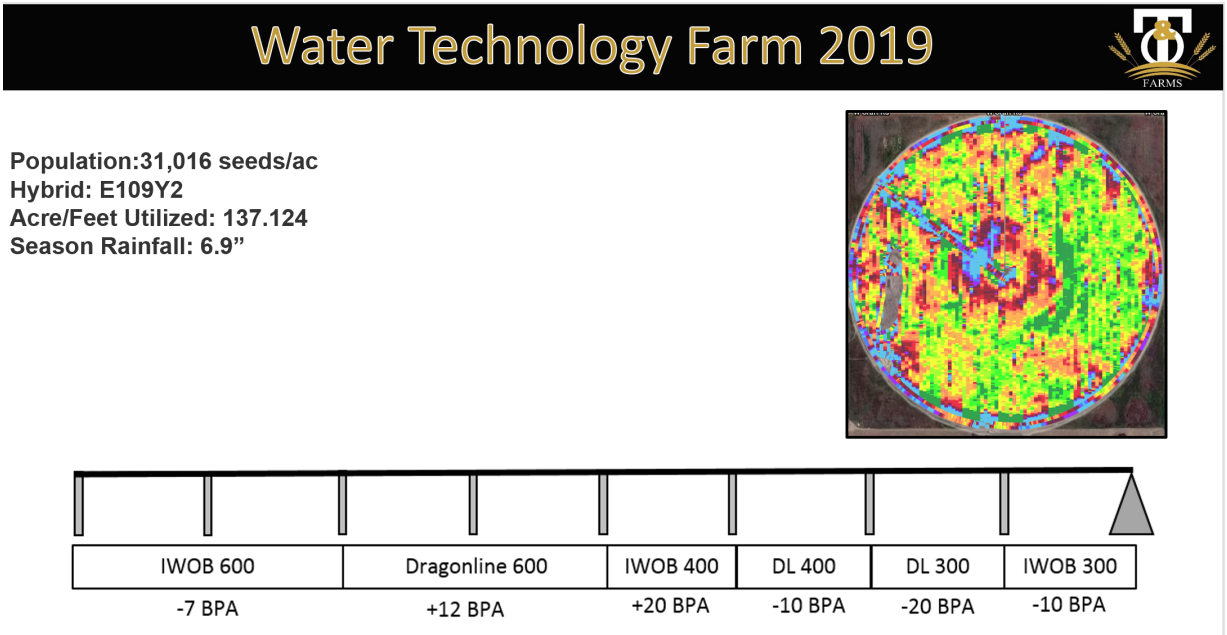


Kansas High Plains Aquifer Changes in Aquifer Thickness. Data downloaded on 5/31/2022 from The Kansas Geological Survey's High Plains Aquifer Atlas, https://www.kgs.ku.edu/HighPlains/HPA_Atlas/index.html.



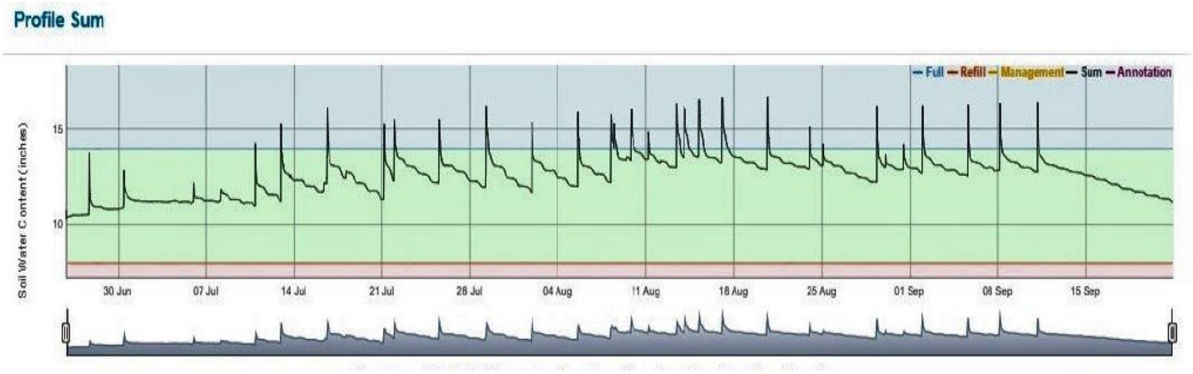
Overview Map: T&O Farms Water Technology Farm

T&O Farms Water Technology Farm Partners Sign



T&O Farms Water Technology Farm: 2019 Growing Season Overview Example

Span 7 600 GPM iWob



T&O Farms Water Technology Farm: Soil Moisture Probe Information