

**Testimony of Kevin France, Chief Executive Officer
on behalf of SWIIM System, Ltd.**

Farming in the 21st Century: The Impacts of Agriculture Technology in Rural America

**Before the House Committee on Small Business
Subcommittee on Innovation and Workforce Development Hearing**

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Thank you, Madam Chairwoman and other members of this committee. I appreciate the opportunity to speak on the impact of agricultural technology in rural America and I appreciate the opportunity to share some of my experiences.

Background

My name is Kevin France, and I am Chief Executive Officer of SWIIM System. I have significant experience related to agricultural-based ventures, specifically with regard to water rights policy. My graduate and undergraduate degrees are in business administration and my professional experience includes developing technologies through public partnerships that can be integrated into the private sector.

SWIIM is an on-farm agricultural water accountant – twice recognized as a Top 25 ag-tech company by Forbes Magazine. We maintain a distribution agreement with Western Growers Association; one of the largest agricultural trade organizations in the nation. This agreement ultimately led to a ground-breaking investment by Western Growers in SWIIM. Part of the reason for this investment is they believe that one of the keys to the sustainability of agriculture lies with growers being able to quantify and protect their water allocations into the future.

Our clients are made up of growers of all sizes – individual farmers to corporations, as well as irrigation districts. We provide complete water use reporting, including applied and consumed water resources, on a real-time basis, by field and by crop. Similar to the way your CPA provides a detailed statement of financial accounts – money in, money out, as well as from what source. We enable growers to quantify and protect their water allocations into the future.

Agricultural Technology Impacts

There are a variety of technologies available in the marketplace that tracks water flow, soil moisture, crop water use, plant health and other important data points. In addition to field-level data, some companies focus on regional or remotely-gathered data, including climatic (weather stations), satellite imagery or aerial sensors and drones.

Prior to the “Internet of Things” (IoT) revolution, sensors were not generally connected to the internet and as a result, data was gathered manually, normally by the grower, when time permitted. Now, sensors are being connected to the internet and data is being made available in near-real-time. Growers need better access to this game changing technology in order to sustain our agricultural economy in the face of ever increasing water shortages.

Typically, agricultural technology companies work with two different types of clients. The first type gathers some level of field data and is always looking for new tools to provide better data as it relates to their operations. The second type of client is not as fortunate. They are dissatisfied with their data or are not tracking any data at all. They may be frustrated with their farm’s efficiency; concerned that new regulations will reduce their ability to remain profitable; and upset because they do not have the right tools to plan and manage their operation.

With the reduced cost of sensors and the wider overall availability of data, growers are now able to benefit from analytics and do not need to entirely rely on how they “feel” about a specific crop or field. SWIIM provides a higher level of data analytics than has been previously available.

Background

Our initial research that led to SWIIM’s development was originally funded by private investment and underpinned by state water conservation grants. The technology was then developed over a five-year period through an agreement with the US Department of Agriculture, Colorado State University and Utah State University. Our first issued patent was co-developed directly alongside the USDA. Since then, three patents have been issued in total. The research included accurate in-field tests, alongside the development of an algorithm, that underpin our technology.

We utilized a *Cooperative Research and Development Agreement*, more commonly known as a “CRADA,” whereby we paid the federal government to develop the algorithm and process used to calculate water application and consumption, which results in an accurate water use statement. These are the same types of agreements used by the Department of Defense to develop technologies with the private sector.

SWIIM automatically takes water delivery data from a grower's field and compares water consumption as it is occurring in real time, simultaneously, through a combination of connected equipment, regional weather data and satellite overlay. This data is transmitted securely to the cloud and is seamlessly "meshed together," to provide an auditable trail of data. This can be used to create a baseline, as the grower looks to improve his or her overall water use efficiency. The system also provides easy-to-read graphs and map overlays within its online platform accessible from any device – tablet, computer or smartphone. We are able to deploy the technology on already-installed, compatible equipment; or if needed, we install new equipment.

In addition to audited reports that have been used to settle water disputes, we have a full time quality assurance department that is monitoring equipment and data sources each day looking for irregularities related to instrument problems and other factors.

Water Allocations

Depending on their location, a grower may have access to surface water sources (i.e., river water), or access to groundwater sources via pumps. Some growers will have access to one or both sources for irrigation, while others will lose access to their entire water portfolio, with little if any notice. If this occurs, significant impacts can include an entire loss of the operation.

Unlike other inputs to a farm, whether it is seed, fertilizer or labor, water is the only input to a farming operation that has no alternative source, and if not available, could put the farmer completely out of business.

Restrictions on Use

By way of example, the Colorado River – a prime surface water source for 7 western states is over-appropriated by as much as 40 percent¹, leaving some farmers without water to grow the crops on which our nation depends. Years of drought exacerbates this situation.

As another example, take California's recent passing of the Sustainable Groundwater Management Act to manage over-pumping of its aquifers. With these upcoming restrictions, at least 500,000 acres² of farmland in the Central Valley of California will be without water – which means no crops will be grown.

Our clients tell us they fear for their livelihoods and the legacy of their operations, many of which have been in their families for generations. Growers need access to updated

¹ *On the Water-Starved Colorado River, Drought Is the New Normal*, by Jim Robbins, Yale Environment 360, Published by the Yale School of Forestry & Environmental Studies

² *Water and the Future of the San Joaquin Valley*, Public Policy Institute of California (PPIC), Ellen Hanak, et al.
<https://www.ppic.org/publication/water-and-the-future-of-the-san-joaquin-valley/>

technologies to fight the consequences of drought and lack of water availability that is widespread throughout the US.

Current Solutions

The equipment we most often see in the field fails to provide the accurate water accounting needed today. Flow meters in the field are producing data that may be off by as much as 25% and old-fashioned open canal measurements off by as much as 40%.

Think for a moment what that range of potential error could mean on a system-wide basis on the Colorado River or for a groundwater basin. Regardless of the measurement method used, tracking accurate water use in all of our sensitive agricultural regions is critical. It is all about the quality of data; therefore we should all look at ways for growers to access tools to better track their water allocations.

Available Funding From State & Federal Sources

Our experience has shown us that many of the current funding sources are geared toward research. These contributions are valuable, but the net sum result of many of these projects simply leads to more research without much private sector engagement.

The USDA-Natural Resource Conservation Service (NRCS) has programs that are designed to help farmers and irrigation districts implement technologies. They include the Environmental Quality Incentives Program, commonly known as EQIP, and the Regional Conservation Partnership Program, commonly known as RCPP. These programs, although well intentioned, are tough to plan around, as funding cycles do not track with grower needs and the application process is difficult to complete. Funds for these programs are managed and distributed on a regional basis making larger, more scalable projects that can benefit multiple regions more challenging to implement.

One promising example relates to a project we are currently finalizing along the Colorado River in Arizona, with support from the federal government. The client is working with the Bureau of Indian Affairs (BIA) and the Bureau of Reclamation (BuRec) to co-fund a SWIIM deployment in an area that will benefit significantly from water use data and will assist in quantifying a good portion of the Colorado River allocation in that respective region. The process includes collaboration with the private sector, alongside the federal government. If this funding project could be expanded, through a partnership between BIA and BuRec, to multiple users along the Colorado River, then more meaningful scaling could be achieved.

Alternative Solutions

To provide paradigm-shifting technologies on a wider scale, funding sources must be flexible, and allow for approval on a project-wide basis across different regions, opposed to a region-by-region basis as it is currently done. Traditional funding packages as offered primarily through the USDA are managed by each regional office. This does not allow private companies to span projects in multiple regions very efficiently. We should provide more latitude to federal agencies that are best suited to distribute funds outside of the traditional programs that are currently available.

Thank you for the opportunity to share this story today and more importantly, thank you for addressing the needs of our growers – our food supply is at stake.