

TEXAS AWE REPORTER

A PUBLICATION OF THE TEXAS PROJECT FOR AG WATER EFFICIENCY

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Chairman Rubinstein Talks to Texas AWE Reporter

In July 2014, the Texas AWE Reporter sat down with Texas Water Development Board chair Carlos Rubinstein to talk about agriculture and water in the Rio Grande Valley and how Texas agricultural interests might benefit from the State Water Implementation Fund for Texas (SWIFT). Chairman Rubinstein is well informed about water needs of producers in the Lower Rio Grande; he previously served as Commissioner for the Texas Commission on Environmental Quality and as the Rio Grande Watermaster.

AWE: In light of diminishing flows in the Rio Grande, what can be done to ensure ag production remains a strong part of the economy in the Valley?

Chairman: Agriculture is the biggest driver of the economy in the Valley—from ag production to packing, it is a \$396 million industry. Then there's the multiplier effect; every dollar produced from agriculture can be multiplied seven times. It's just a huge driver of the economy in the Valley. But agriculture is also the number one user of water in the Valley, and we can quantify what happens when we don't have water to irrigate our crops. A 2011 study projected that up to 4,800 jobs can be at risk. The economy of the Valley can be hit very hard by lack of water.

But we can improve the way that we move water from the Rio Grande to a turnout at the farm. There's a tremendous opportunity to conserve water right there. And we can continue to improve the great work that's already begun in the Valley to more efficiently apply water to crops—still maintaining high yields, but utilizing less water. When ag water is moved and used efficiently, it also helps municipalities.

The more efficient we are in moving water from the Rio Grande to the farmland and also to the city, the more water will be available for both ag and for municipal use. To me, this means that tremendous opportunities exist for partnerships between agricultural interests and municipal interests on the efficient use of water in the Rio Grande.

AWE: What resources can the Texas Water Development Board provide to help with irrigation efficiencies in the Valley?

Chairman: Right now, all across Texas there is a lot of discussion about how and where we will use the State Water Implementation Fund for Texas (SWIFT). This refers to the \$2 billion of voter-approved funds that have been set aside to provide water for our future growth. For the Valley, it means that funding will be available to incentivize new water management strategies. How will this be helpful for agriculture? The statute that created the SWIFT has



(continued inside)

The Texas Project for Ag Water Efficiency is developed and managed by the Harlingen Irrigation District with grant funding from the Texas Water Development Board.



From river to farm.

“Rubinstein...” (continued)

mandated that 20 percent of the fund must be used for conservation and reuse projects. This can apply to either agriculture or municipal interests.

Additionally, ten percent of the fund has to be used for agriculture and rural interests, so again, a giant opportunity to assist the Valley.

AWE: What is the potential for SWIFT funds to be used by irrigation districts in the Valley?

Chairman: The answer is simple: look at regionalization and partnerships. How can districts partner with their neighboring cities? How can they partner with neighboring districts? How can multiple irrigation districts partner together to identify projects and move them forward? Regional projects and partnerships between cities and districts will be better able to compete for these funds. These are the type of things we’re looking for at the Board.

AWE: What changes can we look for in the Valley with regard to water supply?

Chairman: The more near-term change we’ll see is a renewed focus on conservation and efficiency in how we move water from the Rio Grande to where we’re going to use it. But I think you’ll also see in the Valley continued interest in exploring brackish groundwater desalination and seawater desal — those opportunities are there. And we’ll never lose focus on the fact that Mexico still has an obligation to comply with a treaty.

AWE: Do you have a final message for ag water interests in the Valley?

Chairman: The message I would deliver to all user interest groups— environmental, municipal, industrial or agriculture, particularly ag in this case, because it’s such a large part of the economy in the Valley— is you must remain involved in the regional water planning process. It’s important. **AWE**

“Partial Root-Zone Drying” Augments Water-Savings in Citrus Irrigation

A new add-on irrigation technique is squeezing out yet more water in citrus irrigation. Ongoing demonstrations being conducted by Dr. Shad Nelson and Dr. Juan Melgar at the Texas A&M – Kingsville Citrus Center show that incorporating “partial root-zone drying” (PRD) with dual-line drip or micro-jet systems produces up to 40 percent additional water savings while preserving fruit yield, quality, and shape.

Last year the Citrus Center set up a new “water deficit irrigation” site with grant funding from the Texas Water Development Board to try out methods of managing citrus irrigation under drought and other water stress conditions. The site – composed of mature, 25-year-old Rio Red citrus trees – is irrigated via micro-jet spray and dual-line drip, both established methods for increasing water efficiency. The new twist comes from altering irrigation schedules. Trees

are irrigated on one side one week and the alternate side the next week, on the theory that they will respond with increased stomatal closure and preserve water as the roots sense water stress on one side.

“While dual-line drip and micro-jet spray both work as low water use irrigation strategies in citrus,” stresses Dr. Nelson, “alternating irrigation events via PRD can even further increase water savings.”

And it looks like the theory behind “partial root-zone drying” (PRD) does indeed hold water. After one year’s data, the PRD demonstrations are showing up to 40 percent water savings over conventional dual-line drip and micro-jet sprinkler spray irrigation system configurations used in citrus groves. (See table.) The site will continue to be evaluated throughout 2014. **AWE**



Partial Root-Zone Drying Enhances Low Water Use Irrigation Systems

Irrigation Method	Water Use (L/yr/tree)	Yield (kg/tree)	Fruit Diameter (mm)	Juice (%)	Brix* (TSS)
micro-jet spray	18,500 ±1,500 a	147.0 a	87.2 a	38.2 a	11.2 a
dual-line drip	19,000 ±2,000 a	144.0 a	87.2 a	39.9 a	11.0 a
partial root-zone drying	11,500 ±1,000 b	165.2 a	86.7 a	38.7 a	11.2 a

a = no statistical difference between treatments;
b = statistical different at the 95% confidence level
 Data shown represent one year’s results from replicated rows and trees for fruit quality assessment only.
 Additional data are needed to evaluate impacts over multiple growing seasons.
 *Sugar content expressed as total soluble solids

S A M S P A R K S



Sam Sparks recently purchased four surge valves at a reduced rate from the Surge Valve Coop, and he sat down with TexasAWE to discuss why he decided to try them out. “I believe the surge valve is going to benefit our operation in many different areas. Not only will it save water, it’ll also save time on labor. We can water more with less manpower, saving us money,

making us more efficient, and even increasing the productivity of our crops.”

This is Sam’s twelfth season growing crops, but his family has been farming in the Valley since the 1980’s, raising cotton, corn, grain sorghum and sugar cane. Ongoing drought has impacted their production in recent years, forcing them to leave some fields unplanted. “Water conservation will always be important because irrigation water is our most precious resource. We cannot be as productive as we are today without it. That’s why we need to extend the use of our irrigation water.”

“To those who are hesitant to implement surge valves into their practice, I would say, you just need to try it. It’s a very easy, manageable practice that I think everyone needs to try. Once they’re comfortable with it, I think they’re going to want to buy more. I believe it’s just a matter of taking that step to purchase or borrow a surge valve from a neighbor, and see just how user-friendly it is. And once you purchase the surge, it has a lifespan of many, many years.” ^{AWE}

News in Brief

Annual Report Now Available

Texas AWE had a very busy 2013. We provided 28 surge valves to local growers and calibrated some 50 water meters for other irrigation districts in the lower Valley. Our team of researchers built on their previous work, showing that surge and narrow-border flood irrigation are not only water-saving, but also economically beneficial for Valley producers. The Rio Grande Center for AWE hosted training workshops and is now home to a new weather station for the South Texas Weather Network. Learn about these projects and much more in the 2013 Annual Report, available now on our website (TexasAWE.org) in the Resources section.

Mexican Water Debt

Mexico is still a long way from complying with the 1944 treaty, which requires that an average of 350,000 acre feet be delivered annually to the United States, in cycles of five consecutive years. Despite this, Mexico does not currently allocate water for the U.S. in its planning or recognize the U.S. as a “user.” Mexico generally only sends water when there is a surplus due to rain, making water planning difficult in the Valley for agriculture and municipalities.

The International Boundary and Water Commission and the U.S. State Department are responsible for enforcing the treaty, but so far have had limited success. More information is available at: www.twdb.state.tx.us/about/board/rubinstein/mexico/index.asp

Surge Valve Cooperative

Twenty-eight surge valves have already been provided to Valley growers at a reduced rate, and more are available. \$300 buys a \$2,000 surge valve with programmable controller and free training and technical assistance. Eight years of Texas AWE on-farm demonstrations in the Valley and an A&M economic analysis have shown that surge valve irrigation is considerably more water-efficient than furrow flood, and can increase net cash farm income by 56 percent. More information can be found at: www.TexasAWE.org and www.RGRWA.org.

Valley Environmental Summit October 9

This year’s Valley Environmental Summit will focus on household hazardous waste and recycling. The event will feature speakers, activities, and the popular Video and EnviroArt contests. It will be held October 9 at the Brownsville event center.

Coming Soon

Spanish versions of our factsheets on surge and narrow-border flood (NBF) irrigation will soon be available in print and online. Video demonstrations of surge and narrow-border flood will also be available from your home computer or smart phone. We’re currently working on a video about the Texas Water Development Board’s work to increase agricultural water efficiency in Texas. They have funded a wide range of rural projects, including Texas AWE, granting more than \$100 million in agricultural water conservation projects since 1985. All coming soon to the Resources section of TexasAWE.org.



From river to farm.

301 E. Pierce Avenue
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Ag water news you can use— **TEXAS AWE REPORTER.**

The GM's Report: Next Steps for the Future

Ten years of funding for Texas AWE are drawing to a very successful close. We've proven up low-cost techniques that irrigation districts can use to more efficiently deliver agricultural water to farms and that producers can use to more precisely apply that water to their crops. We've also made significant progress in actually implementing these techniques in the field, especially in the past year with the Surge Valve Cooperative.

This progress was due in large part to teamwork and regional partnerships. The SVC is funded by the Bureau of Reclamation and the Rio Grande Regional Water Authority and supported with in-kind services from the Texas AWE team and invaluable assistance from our local Texas AgriLife Extension offices.

This kind of regional partnership is exactly what is needed to keep Texas AWE working for the Lower Rio Grande Valley past its initial funding period. My good friend Carlos Rubinstein notes in this issue of Texas AWE Reporter the "tremendous opportunities" for partnerships between agricultural and municipal interests on efficient water use along the Rio Grande. "Regional projects and partnerships between cities and districts will be better able to compete" for funding from the new SWIFT funds, says Carlos; "these are the type of things we're looking for at the Board."



With that kind of invitation, what are we waiting for? The proven potential for water conservation in the Lower Rio Grande Valley is huge. Achieving that potential, however, requires ongoing outreach, training and education, and partnership building. Dry conditions are predicted to continue; and Texas AWE is ready.

A handwritten signature in black ink, which appears to read 'Wayne Halbert'.

Wayne Halbert, General Manager, Harlingen Irrigation District