

# TEXAS AWE REPORTER

A PUBLICATION OF THE TEXAS PROJECT FOR AG WATER EFFICIENCY

## IN THIS ISSUE

SURGE IN COTTON  
UPS PROFITS

BORDER FLOOD IN CITRUS  
IMPROVES PACK-OUT

HID EARNS  
BLUE LEGACY AWARD

\$2,000 SURGE VALVES  
FOR ONLY \$300!

PRODUCER SPOTLIGHT:  
TOMMY BRADFORD

GM'S REPORT:  
THE VALUE OF WATER

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.

## A&M Analyses Show Bottom-Line Benefits to Modifying Furrow Irrigation Techniques

Valley producers can realize significant financial gains by making some easy adaptations to furrow/flood irrigation methods, according to recent analyses by Texas A&M agricultural economist Mac Young.

Young reviewed eight years of data on surge and narrow border flood collected by the Texas Project for Ag Water Efficiency. While earlier reports corroborated that these irrigation techniques can save substantial amounts of water compared to flood irrigation, the new analyses confirm that they also maintain quantity of yields in field crops and citrus and improve quality in citrus, meaning higher net cash farm income (NCFI) to the producer.

### Surge in Cotton Ups Profits, Farm Income

Young evaluated data on the amount and cost of water used plus expenses for labor and equipment required for furrow and surge in irrigated cotton, using actual 2013 water pricing scenarios in the Lower Rio Grande Valley:

- “in-district” pricing (meaning the grower owns the water rights) at \$18 per acre-foot (AF), or \$1.50 per acre-inch; and
- “out-of-district” pricing (where the grower must acquire water from a water right holder in another district) at \$37/AF with 15 percent water loss and a \$18/AF pumping charge, or \$5.40 per acre-inch.

The analysis shows that despite a \$2,000 price tag for a surge valve, under both scenarios “the additional cost of a surge valve is covered by the water cost savings from using less water.”

Furthermore, Young stresses, “the NCFI advantage of

*(continued inside)*

### Surge Beats Furrow in Cotton: Lower Costs, Higher Cash Flow

	In-District Water* (\$1.50/ac-in)		Out-of-District Water* (\$5.40/ac-in)	
	Furrow	Surge	Furrow	Surge
<b>Costs per Acre per Year</b>				
Water	\$27.00	\$21.00	\$97.20	\$75.60
Polypipe & Labor	37.00	37.00	37.00	37.00
Surge Valve (over 10 yrs)	-	5.13	-	5.13
<b>TOTAL COSTS/ACRE</b>	<b>\$64.00</b>	<b>\$58.00</b>	<b>\$134.20</b>	<b>\$117.23</b>
<b>10-Year Average Financial Indicators</b>	<b>Furrow</b>	<b>Surge</b>	<b>Furrow</b>	<b>Surge</b>
Total Cash Receipts/Acre	\$1,024	\$1,024	\$1,024	\$1,024
Total Cash Costs/Acre	892	891	985	963
Net Cash Farm Income/Acre	132	133	39	61
Cumulative 10-Yr Cash Flow/Acre	\$1,368	\$1,382	\$252	\$363
Cumulative 10-Yr Cash Gain/Acre	-	\$14	-	\$111

\*Based on actual 2013 water-pricing scenarios in the Lower Rio Grande Valley: “In-District” = grower owns the water rights at \$18/AF; “Out-of-District” = grower acquires water from another district at \$37/AF with 15% water loss plus \$18/AF pumping charge.

Source: *Water Savings and Higher Profit Margins Possible in Cotton and Other Field Crops in the Lower Rio Grande Valley*, FARM Assistance Focus 2013-4, December 2013; Department of Agricultural Economics, Texas A&M AgriLife Extension, Texas A&M University System.

"A&M Analyses..." (continued)

surge over furrow improves significantly as the price for irrigation water increases," a situation becoming increasingly more common due to drought and reduced inflows into the Rio Grande. Under this scenario, surge irrigation produces a 10-year average cash flow of \$363 per acre, **56 percent higher than furrow.**

### Border Flood in Citrus Improves Pack-Out, Raises NCIF

Adapting traditional flood irrigation in citrus with "narrow border flood" (NBF) substantially improves pack-out percentages and yields and thus net cash farm income, according to Young's analysis of data collected by Dr. Shad Nelson and Dr. Juan Enciso over eight growing seasons for Ruby Red grapefruit production.

In NBF, raised berms channel water faster down rows and underneath the tree canopy. Because NBF irrigation applies water at a faster rate, it more adequately targets the root zone of the trees and retains fertilizer within that

"Border flood's advantage over conventional flood is largely reflective of higher average annual yields (21.2 tons/acre for border flood and 18.9 tons/acre for flood) and higher average fresh pack-out."

target zone. The result is higher yields of better quality, substantially enhancing net farm cash income. NBF uses one-third less water than traditional large-pan flood irrigation and requires minimal investment in equipment.

The data conclusively show that NBF irrigation produces the highest net cash farm income (NCIF) for citrus growers in the Lower Rio Grande Valley. Young's analysis puts the projected 10-year

average annual NCIF for border flood at \$1,360/acre, almost **68 percent higher** than the projected NCIF for flood irrigation.

### Border Flood Irrigation Produces Highest NCIF for Ruby Red Grapefruit

Irrigation Method	Pack-Out Scenario	10-Year Averages per Acre			Cumulative 10-Yr Cash Flow/Ac
		Total Cash Receipts	Total Cash Costs	Net Cash Farm Income	
Flood	High	\$3,330	\$2,200	\$1,130	\$12,040
	Average	3,010	2,200	810	8,550
	Low	2,600	2,200	400	4,220
NBF	High	\$3,970	\$2,160	\$1,810	<b>\$19,180</b>
	Average	3,530	2,160	1,360	<b>14,460</b>
	Low	3,440	2,160	1,280	<b>13,560</b>
Drip	High	\$3,520	\$2,280	\$1,240	\$13,170
	Average	3,350	2,280	1,070	11,360
	Low	3,160	2,280	880	9,330
Micro-jet	High	\$3,650	\$2,310	\$1,330	\$14,160
	Average	3,600	2,310	1,290	13,700
	Low	3,390	2,310	1,080	11,490

Crop prices calculated from actual 2005-2012 net prices received by collaborators, adjusted for harvest, packing, and commission charges: \$285.80/ton for fancy; \$99.52/ton for choice; \$5.44/ton for juice.

Source: *Increased Water Use Efficiency and Profitability in Citrus Production in the Lower Rio Grande Valley*, FARM Assistance Focus 2013-5, December 2013; Department of Agricultural Economics, Texas A&M AgriLife Extension, Texas A&M University System.

Border flood NCIF also is higher than drip, by more than 27 percent, and than micro-jet, by more than 5 percent. Young says that NBF's cash advantage over flood comes from its higher yields and fresh pack-out ratios; its advantage over drip and micro-jet are due to lower equipment costs. **AWE**

## HID Awarded 2013 Texas Blue Legacy Award for Agriculture

The Harlingen Irrigation District has been honored with the 2013 Texas Blue Legacy Award for Agriculture by the Texas Water Conservation Advisory Council. This prestigious award is presented annually to individuals or entities making outstanding commitments to preserving the state's water resources through outreach, education, and example.

HID was selected for the award based on its commitment to incorporating water conservation practices into district operations and researching and promoting on-farm irrigation efficiencies in the Lower Rio Grande Valley.

Under the leadership of General Manager Wayne Halbert, HID has long been an advocate for and a leader in promoting best management practices and innovative technologies for stretching agricultural water

supplies. Since 2004, HID has managed the Texas Project for Ag Water Efficiency (Texas AWE), a 10-year demonstration funded by the Texas Water Development Board. The project has focused on increasing water use efficiencies both in-district and on-farm.

As part of this project, HID has successfully incorporated new technologies in its operations infrastructure, which delivers up to 52,000 acre-feet of water per year. Automated gates, telemetry, and supervisory control and data acquisition integrate 40 miles of canal, 200 miles of pipeline, 37 automated gates, and 36 re-lift pump houses. The entire network can be remotely controlled and monitored in real time via smart phone, computer, or tablet.

The District also has engaged in numerous on-farm demonstrations that have substantiated methods for better managing irrigation for water efficiency while maintaining crop quality and yield. These studies have substantiated that conserving water on-farm through more efficient irrigation techniques can actually boost yields and farm income (see lead story, pp. 1-2). More information at [www.TexasAWE.org](http://www.TexasAWE.org). **AWE**

# \$2,000 Surge Valves for Only \$300 Each!

A limited number of surge valves at the dirt-cheap price of \$300 are still available through the Surge Valve Cooperative.

Here's how the Coop works:

- You receive up to two surge valves for an initial payment of \$350 each;
- You attend a free, half-day training session on how to use the equipment for maximum irrigation efficiency; and
- You meter and record your water use during actual irrigation in 2014 and turn in your results.

Cooperators who participate in a final wrap-up meeting about field experiences receive a \$50 rebate per valve, bringing the total cost down to \$300 each.

Join the smart growers who've joined the Coop! The next training session takes place **Wednesday, March 19, at the Rio Grande Center for Ag Water Efficiency**. Registration forms are available online at [www.RGRWA.org](http://www.RGRWA.org) and [www.TexasAWE.org](http://www.TexasAWE.org) or call Heather Stock, 956.423.7015.

The Surge Valve Coop is made possible by a grant from the U.S. Bureau of Reclamation to the Rio Grande Regional Water Authority and is supported by the Texas Project for Ag Water Efficiency. AWE



Surge Valve Cooperators claim their \$300 valves following free training at the Sept. 19, 2013, workshop at the Rio Grande Center for Ag Water Efficiency.

## PRODUCER SPOTLIGHT

# TOMMY BRADFORD

Tommy Bradford grew up on the very same land he has farmed for more than 40 years, some 1,200 acres near Progreso, about a half-mile north of the Rio Grande. Ongoing drought has impacted his production; in 2013, due to water curtailments, Tommy planted only 40 percent of his land and this year with a less water-intensive crop, substituting seed corn for onions.

Last September Tommy joined the Surge Valve Coop supported by Texas AWE and immediately put portable surge valves to work in three of his fields. Texas AWE talked to Tommy about his reasons for joining the Coop and the results he has experienced with surge irrigation.

*Thanks to the Coop, Tommy was able to purchase his surge valves at a fraction of their normal cost. But that's just the beginning; Tommy reports additional tangible benefits from just one season of using surge irrigation:*

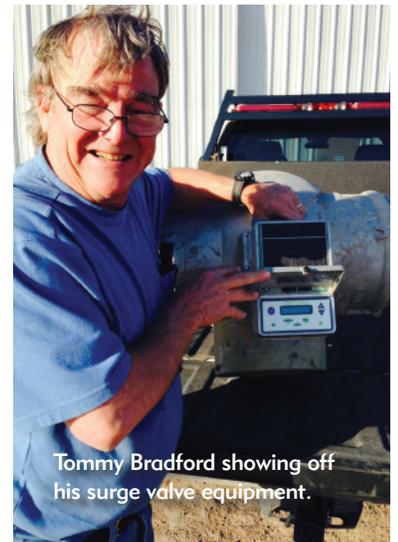
- *First, nearly 10 percent savings in overall water use. "With surge irrigation, the water doesn't percolate as deeply as more traditional irrigation methods, so it's just a little bit more efficient, and these*

*days that can make a big difference," Tommy notes.*

- *Second, unanticipated savings on labor. Tommy was able to set up and irrigate two sets at a time, reducing the number of trips to the field to adjust irrigation equipment.*

*Based on these results, Tommy is planning to try surge irrigation on cotton and grain sorghum this spring. He's also experimenting with other methods of irrigation efficiency, such as reducing crop row length, which is another proven technique that makes surge irrigation even MORE efficient and also reduces runoff.*

*"One thing I know for sure is that we're going to have less water for farming in the future," Tommy stresses. "If we're not moving to more efficient use of water through our tools and our practices, growers are going to be out of business down here in the Valley." AWE*



Tommy Bradford showing off his surge valve equipment.



From river to farm.

301 E. Pierce Avenue  
Harlingen, TX 78550

## Ag water news you can use— **TEXAS AWE REPORTER.**

### The GM's Report: The Value of Water

Tom McLemore, Texas AWE Project Manager, is just back from *Irrigation Leader's* 2nd Annual Operations and Management Workshop with a thought-provoking quote: "Water is a white noise distraction for most people until it's gone or there is too much."

Those words ring true for most of us in Texas, and especially here in the Lower Rio Grande Valley.

For too long, Valley water users have been complacent about this invaluable resource. We've continued to rely on the past efforts of earlier generations to guarantee water supplies:

- Our irrigation districts established in the early 1900s to deliver ag water to farmland stretching from the Rio Grande through Willacy County and then to the towns that sprang up as the land became cultivated and agribusiness thrived;
- Our grand reservoir system, first operational in 1954 with the dedication of Falcon and later expanded to Amistad in 1971, a system built with twin objectives of controlling flooding and maintaining water supplies in times of drought; and
- our water allocation system adjudicated by the courts and the watermaster services created by the State of Texas to ensure that those water rights are observed.

We have a responsibility to future generations in the Valley to build on these achievements by taking new steps to respond to developments threatening water supplies, be it Mexico's failure to deliver Treaty-specified volumes of water from the Rio Conchos and other tributaries or ongoing drought and increased temperatures.

No longer can we rely on plentiful, cheap water to irrigate our fields. It's time we respond to the water issues facing us, just as our ancestors responded.

Texas AWE has shown that farmers and irrigation districts can easily adapt current practices to better manage water flow and delivery. Plus more efficient irrigation techniques not only use less water but also increase farm income. The economic analyses of surge and narrow border flood prove without a doubt that water conservation is a winning proposition.

Please take the time to review these important data and join the latest group effort to ensure water for our communities.

A handwritten signature in black ink, appearing to read 'Wayne Halbert', is written over a light blue background.

Wayne Halbert, General Manager, Harlingen Irrigation District