

# North Plains Water News



A Publication of the NORTH PLAINS GROUNDWATER CONSERVATION DISTRICT

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## Demonstration Projects are Tabulating Data

The district's "3-4-5 Gallon Production Maximization" (3-4-5 GPM) demonstrations are all finished with harvest. That includes the four demonstration sites across the district and the fields at the North Plains Water Conservation Center (WCC) at Etter. In this, the second year of the "3-4-5 GPM" project, cooperators include Dennis Buss of Hartley Feeders in Hartley County, Zac Yoder in Dallam County, Harold Grall in Moore County and Danny Krienke in Ochiltree County. The district's corporate partner, Crop Production Services (CPS) is also conducting "3-4-5 GPM" demonstrations at the WCC, in cooperation with WCC farm manager, Stan Spain.

According to project lead, Leon New, last year's late season rainfall really helped this year's crop. "Pre-season soil moisture was superior

because of late rainfall last fall across the district, some of it during harvest," said New. Hail was not a significant factor at the 2016 demonstration corn fields, and the area only experienced a few weeks of extreme heat in late June and early July. The heat had some negative effect on the crop, depending on the planting date and the crop stage of development. The first "3-4-5 GPM" field was planted on April 27<sup>th</sup> and the last was on June 12<sup>th</sup>. The remaining fields were planted generally during the last week of May.

New said corn production will likely be lower than in 2015. "Yields may be down a little this year due to less overall rainfall across the district," said New. Rainfall ranged from 4.68 to 12.31 inches at the demonstration fields in 2016. He explained that there was, however, good pollination throughout all the "3-4-5 GPM" fields, even though



*Photo courtesy of Casey McAnally, CPS*

some of it was during the hotter part of the summer. "Early season soil water allowed the crop to get through the hot period and caused the plants to root deep to 3-4 feet for soil water," New said.

An addition to the 2016 "3-4-5 GPM" project is the comparison of

subsurface drip irrigation (SDI) and Low Energy Precision Application (LEPA) center pivot irrigation. LEPA applies the irrigation water in a bubble or similar pattern no more than 18 inches above the soil using drop hoses. It is reported to reach application

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## International Visitors Tour Water Conservation Center

The North Plains Water Conservation Center (WCC) has been attracting an international audience recently. Irrigation equipment dealer, Farris Hightower, brought a group of farmers from Australia to the WCC to discuss the subsurface drip system in mid-September.

Later, a group, including crop nutrition consultant, David Reinart, Jourdan Bell, Ph.D., Assistant Professor and Agronomist at Texas A&M AgriLife Research and Extension in Amarillo, Robert Schwartz, Ph.D., USDA Soil and Water Management Research, and visitors from Western Africa and Ukraine visited the WCC to discuss district operation on the farm.

Iaryna Bulba, Ph.D., a Ukrainian researcher for the Institute of Water Problems and Land Reclamation, is currently in the USA for a 12-week Borlaug fellowship. Bulba plans to acquire new knowledge and skills related to land irrigation and efficient use of water resources in agriculture, crop water use modeling, and the

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Jourdan Bell, Eric Burton, David Reinart, Paul Sigle, Seydou Traore, and Iaryna Bulba at the WCC for a tour.

## NPGCD Accepting Applications for Master Irrigator 2017

After experiencing success in its first year, North Plains Groundwater Conservation District (district) is now accepting applications for the 2017 Master Irrigator program.

Through a partnership agreement between the district and the USDA's Natural Resources Conservation Service (NRCS), an estimated \$1.6 million in funding through the Environmental Quality Incentives Program (EQIP) has been provided to support the new Master Irrigator program over four years. Participants who complete the 2017 course and receive their Master Irrigator certification will have priority access to the special EQIP funding. Participation in the Master Irrigator program will not affect participant's eligibility for other EQIP funds.

The Master Irrigator program is an irrigation management curriculum made up of 32 hours of intensive irrigation education conducted over four one-day sessions to show producers how to maximize advanced conservation irrigation

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Master Irrigator Graduates of 2016



# Telemetry Installed Making Current Aquifer Conditions Available to Stakeholders

North Plains Groundwater Conservation District (district) staff recently completed installation of data recorders equipped with telemetry in 46 water-level monitor wells.

The telemetry uses cell phones or satellites to send the recorded data from the monitor wells to the district’s servers daily, eliminating the necessity to visit the well site. Monitor wells without telemetry require someone to physically visit the site and download the information.

Currently, there are 435 total monitor wells that can be measured by three different methods in the district. Most observation wells are physically measured annually with a steel measuring tape. Monitor wells with recording equipment that are not equipped with telemetry must be visited quarterly to download recorder data. Monitor wells with telemetry and recording equipment don’t require a visit to the well. There are 55 total monitor wells with data recorders. Of those wells, 46 have telemetry capabilities. That still leaves 379 wells that require a physical trip and tape measurement. In the future, the district hopes to equip more monitor wells with telemetry.

The project to install data recorders in monitor wells began nine years ago. “We knew that eventually we would collect data by telemetry,” said Dale Hallmark, Assistant General Manager and Hydrologist.

The cost of the telemetry equipment should ultimately save the district time and money by eliminating four visits a year to these 46 wells. Monitor wells with telemetry automatically send a file via internet to the district’s server, where an application pulls the information into a database. The information then automatically uploads onto the district’s online interactive map where it is available to the public 24/7, without the need for a log in.

“The telemetry part of it allows people to visit the map online and look and see what the well is doing over time instead of one spot in a year. Its dynamic data instead of static,” said Odell Ward, GIS System Coordinator and Natural Resource Technician Lead.



Telemetry not only takes out the middle man and automatically uploads data, but it increases the accuracy of analyses. “It’s more reliable since we have many points to look at. Telemetry shows us day-to-day over the course of a year instead of one point over the year. Any analysis we do is more accurate and more reliable. We can use more accurate data to make better management decisions.” said Hallmark.

# Dumas Welcome Sign Xeriscaping

Curtis Schwertner maintains the xeriscape garden surrounding the Dumas welcome sign on Hwy 287. The district and the City of Dumas assisted a local Eagle Scout candidate in giving the garden a makeover last year. The garden features many native and low-water use plant varieties. For more information on the garden contact the district at [info@northplainsgcd.org](mailto:info@northplainsgcd.org).



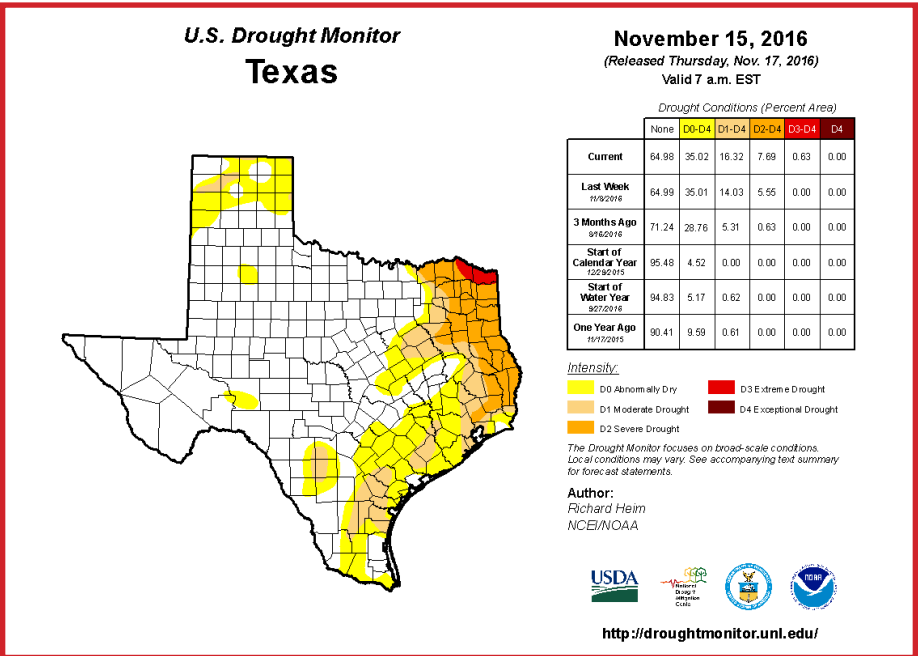
# Demonstrations Harvested

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efficiency levels of 95 percent. SDI uses drip lines buried in the ground delivering water directly to the crop root zone. The WCC provides the opportunity to compare the two high efficiency systems side-by-side, using the newly installed drip field at the WCC. In addition, with the help of board member and cooperator, Harold Grall, the district is continuing demonstrations initiated in 2015 comparing Precision Mobile Drip Irrigation (PMDI) to LEPA. PMDI involves drip hoses being pulled around the field by the center pivot system and applying the irrigation directly to the soil. The demonstrations are comparing water application efficiency, yield performance and economic feasibility of the optional irrigation systems.

“Even though yields may be reduced in 2016, we have some good data to compare the various planting dates, available water, corn hybrid performance and the variety of different irrigation systems used in the demonstrations,” said New. More specific information will be available once harvest is completed and the data is tabulated.

The three year “3-4-5 GPM” project picks up where the district’s “200-12” project left off in 2014. Participants in the “3-4-5 GPM” are using variable rate irrigation to simulate 3, 4, and 5 gallon per minute per acre irrigation conditions in side-by-side, production-scale demonstrations. Irrigation is 1.10 inches per week for the 3 GPM acres, 1.49 for the 4 GPM and 1.85 inches for the 5 GPM. The “3-4-5” participants are applying many of the same techniques and technologies used in the “200-12” and demonstrating their applications under the selected levels of available irrigation using programed variable rate irrigation (VRI) by speed control.





# 2015 Groundwater Production Reporting

The district requires all owners of non-exempt water wells to report groundwater production annually. Table's 1-3, taken from the district's 2015-16 Hydrology Report, show the groundwater amounts reported to the district from 2007 through 2015. In 2015 groundwater production in the four western counties was down from the previous year approximately 369,000 acre-feet while the four eastern counties showed a decrease of 117,600 acre-feet.

Table 1: Groundwater production reported to the District, 2007-2015 (Acre-feet).

County	2007	2008	2009	2010	2011	2012	2013	2014	2015
Dallam	268,700	313,500	317,500	302,600	374,800	372,000	399,300	393,700	297,000
Hansford	106,900	142,700	152,700	130,000	235,000	218,800	202,000	211,700	148,800
Hartley	312,500	364,600	387,400	401,600	519,700	458,700	459,000	442,100	332,700
Hutchinson	35,000	52,900	53,900	42,100	73,800	72,300	69,800	74,000	57,700
Lipscomb	32,800	30,900	30,300	33,900	52,100	55,600	42,600	48,800	39,400
Moore	148,200	191,500	200,300	178,400	271,700	234,700	228,300	210,000	156,700
Ochiltree	53,700	75,600	65,900	62,300	114,400	109,300	98,300	106,300	77,400
Sherman	220,600	275,200	285,600	261,700	407,300	348,100	346,700	361,400	251,700
Total	1,178,100	1,446,500	1,493,200	1,412,200	2,048,500	1,869,200	1,845,700	1,847,700	1,361,100

Table 2: Groundwater production from the District's four western counties in acre-feet, 2007-2015.

County	2007	2008	2009	2010	2011	2012	2013	2014	2015
Dallam	268,700	313,500	317,500	302,600	374,800	372,000	399,300	393,700	297,000
Hartley	312,500	364,600	387,400	401,600	519,700	458,700	459,000	442,100	332,700
Moore	148,200	191,500	200,300	178,400	271,700	234,700	228,300	210,000	156,700
Sherman	220,600	275,200	285,600	261,700	407,300	348,100	346,700	361,400	251,700
Total	949,900	1,144,600	1,190,600	1,144,100	1,573,400	1,413,400	1,433,300	1,407,000	1,038,000

Table 3: Groundwater production from the District's four eastern counties in acre-feet, 2007-2015.

County	2007	2008	2009	2010	2011	2012	2013	2014	2015
Hansford	106,900	142,700	152,700	130,000	235,000	218,800	202,000	211,700	148,800
Hutchinson	35,000	52,900	53,900	42,100	73,800	72,300	69,800	74,000	57,700
Lipscomb	32,800	30,900	30,300	33,900	52,100	55,600	42,600	48,800	39,400
Ochiltree	53,700	75,600	65,900	62,300	114,400	109,300	98,300	106,300	77,400
Total	228,300	301,900	302,700	268,200	475,100	455,900	412,500	440,700	323,100

## International Visitors at WCC

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optimization of irrigation scheduling by studying relevant U.S. experiences and developments.

Guy Fipps, Ph.D., Professor in the Department of Biological and Agricultural Engineering and Bulba's mentor at College Station, contacted Schwartz, her other mentor, to arrange the visit. She spent one week in the Texas Panhandle to gain knowledge in the recent research and developments at the USDA-ARS Bushland Laboratory and visit with Texas A&M AgriLife scientists and technical consultants involved with irrigation management in the region. Bulba was accompanied by Seydou Traore, Ph.D., Extension Associate in the Department of Biological & Agricultural Engineering of Texas A&M University at College Station. Previously, Traore was a Fulbright Visiting Scholar at Texas A&M and worked in the Sahel region of Africa in irrigation and agricultural engineering.

Schwartz contacted Bell to arrange tours, so Bulba and Traore could see the application of irrigation technology and scheduling. With the help of Reinart they scheduled tours of some Panhandle farms, making one of their stops the North Plains Water Conservation Center in Etter, TX.

"Water conservation is our same, ultimate goal. How do we use a limited water supply more efficiently?" Bell said. "Bulba and Traore see value to learn from the university, AgriLife, and the groundwater district on how to manage water more efficiently."

The district's agricultural engineer, Paul Sigle, met the group at the WCC for a tour to view sensors in the field and discuss different ways to schedule irrigation throughout the season and determine crop water needs.

"Bulba and Traore were impressed with the scale of agriculture and the size of the farm here," said Schwartz.

Because Ukraine's irrigation comes from rivers, they have plenty of water. They just have to transport it. In Ukraine, Bulba forecasts how much water to supply to large farms, and then she distributes the information to those pumping

the water to the farms. Therefore, "she wanted to see how irrigation scheduling happens in the Panhandle to take ideas back home with her," said Bell. "She was very impressed and excited to see [the WCC]. She was taking it all in because she had just read about irrigation management, but never had a chance to see it. It meant a lot." Bell said.

While the Panhandle of Texas, Africa, and Ukraine are in three different parts of the world, all have the same environment with a semi-arid, dry climate. Therefore, all are facing the same challenges with water conservation.

Much of the remaining portion of Bulba's fellowship will be spent at the Department of Biological & Agricultural Engineering of Texas A&M University in College Station.



## Master Irrigator 2017

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management and conservation practices that work together to save water, conserve energy, build soil health and enhance farm profitability. The classes fall on consecutive Wednesdays beginning March 22, 2017 and ending April 12, 2017. Perfect attendance is required for EQIP eligibility and graduation.

Classes covering irrigation planning, SDI and remote sensing, soil fertility and probes, efficient center pivot technology, and new technologies and methods give participants a chance to not only learn about better irrigation practices, but also help with implementation. According to one Master Irrigator 2016 Graduate, "I gained knowledge of new products that are available and coming out in the future to make irrigation more efficient and sustainable." Of the 2016 graduates responding to a survey, 100% said they planned to implement the information they learned in the course.

Applications for the 2017 Master Irrigator program accompanied with a \$100 registration fee will be accepted for up to 25 participants or until March 10, 2017. Priority will be given to residents of the North Plains Groundwater Conservation District. For more information and to apply for the program, go to [northplainsgcd.org/masterirrigator](http://northplainsgcd.org/masterirrigator), or call 806-935-6401. You can also "like" the North Plains Groundwater page on Facebook or "follow" us on Twitter (@NorthPlainsGCD) to receive updates on district activities.



# New SDI: Start to Finish



Sub-surface drip irrigation (SDI) system was plowed into the North Plains Water Conservation Center's field in February 2016. The SDI system was fully operational in May 2016.



This picture was taken in mid-August of the corn produced using the new SDI system.

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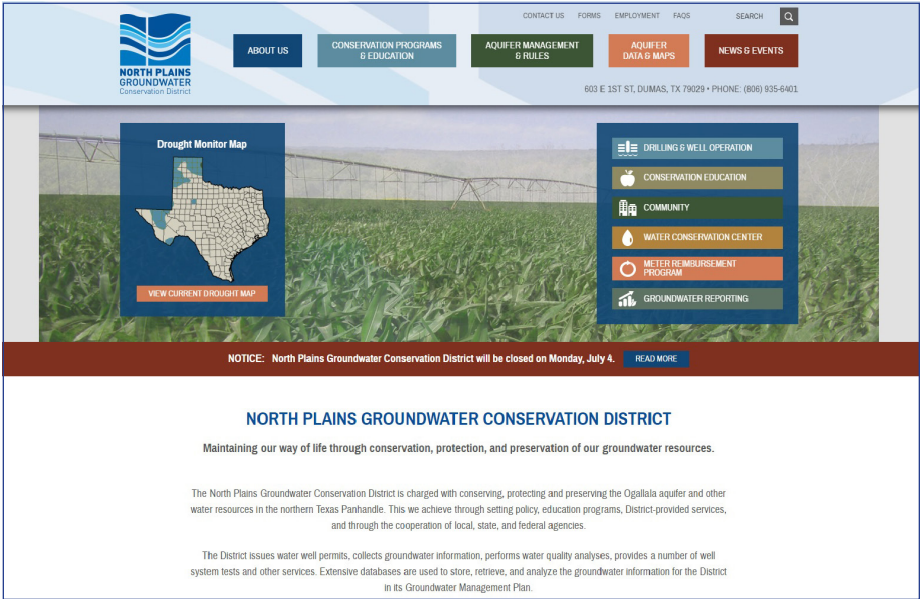
# Meter Reimbursement Program

NPGCD has funds available for irrigators to offset up to half the equipment cost of meters on an agricultural irrigation well. The first contract for the Meter Reimbursement Program concludes December 31, 2016. Therefore, you have just a little over one month to get your reimbursement form turned in for this year. However, not to worry. The second grant will begin in January 2017.

For more information on the Meter Reimbursement Program, go to <http://northplainsgcd.org/aquifer-management-rules/meter-reimbursement-program/>, or call our office at 806-935-6401.

# NPGCD's Website Receives Makeover

After using the same layout for five years, NPGCD's website got a makeover! It's now more user-friendly for stakeholders with the same link: [www.northplainsgcd.org](http://www.northplainsgcd.org).



## Save Paper and Water by Choosing our E Newsletter

North Plains GCD now offers our district newsletters by email. If you would like us to send you a digital copy of the newsletter, you can go online at [www.northplainsgcd.org](http://www.northplainsgcd.org) and fill out the form on the right side of the page, or just email [aholguin@northplainsgcd.org](mailto:aholguin@northplainsgcd.org). You can also go online to download previous newsletters and find us on Facebook, Twitter and Instagram.

