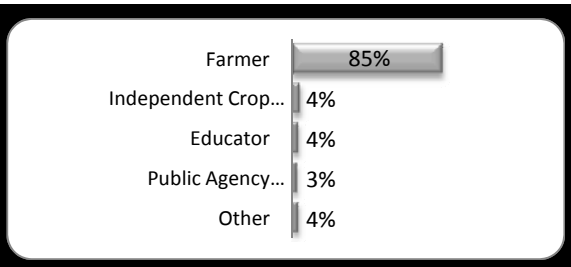
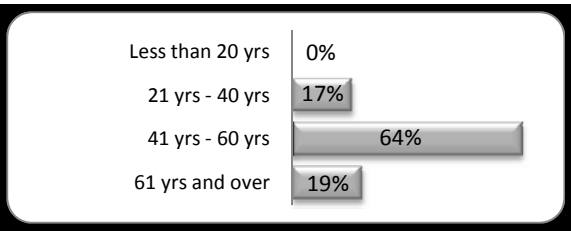
Know how. Know now.

Year:	**2009**
Program:	**NAWMDN Survey**
# of Participants surveyed:	**320**
# of Participants responded:	**139**
% of Reponses:	**43.44%**



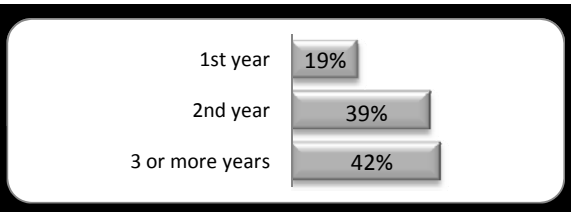
Which of the following do you consider your PRIMARY occupation?

	#	%
Farmer	117	85%
Independent Crop Consultant	6	4%
Educator	5	4%
Public Agency Representative	4	3%
Other	5	4%
Total respondents to this question	***138***	***99%***



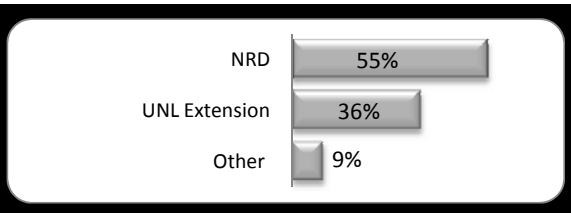
Which age category best describes you?

	#	%
Less than 20 yrs	0	0%
21 yrs - 40 yrs	23	17%
41 yrs - 60 yrs	89	64%
61 yrs and over	27	19%
Total respondents to this question	***139***	***100%***



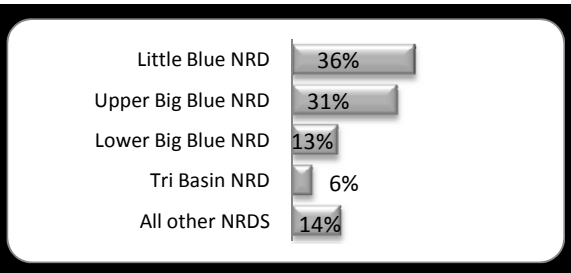
How many years have you been involved with the NAWMDN?

	#	%
1st year	26	19%
2nd year	54	39%
3 or more years	58	42%
Total respondents to this question	***138***	***99%***



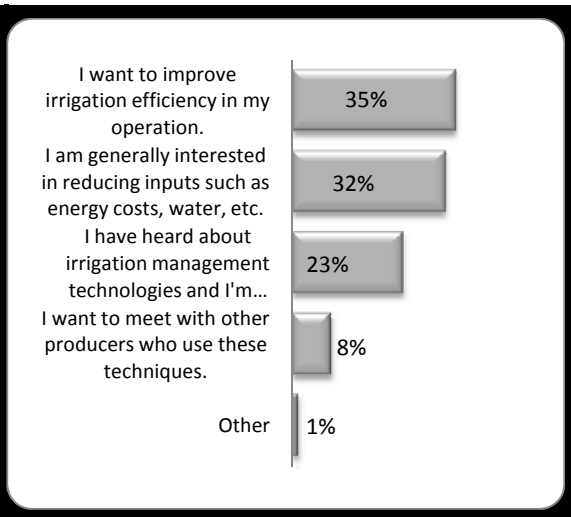
Where did you hear about this program?

	#	%
NRD	76	55%
UNL Extension	50	36%
Other	12	9%
Total respondents to this question	***138***	***99%***



Responses from 29 counties were received. What NRD do you reside in?

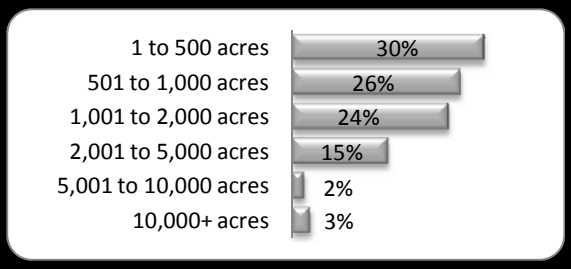
	#	%
Little Blue NRD	48	36%
Upper Big Blue NRD	41	31%
Lower Big Blue NRD	18	13%
Tri Basin NRD	8	6%
All other NRDS	19	14%
Total respondents to this question	***134***	***96%***



Why did you choose to be a part of this project? (Check all that apply)

	#	%
I want to improve irrigation efficiency in my operation.	127	35%
I am generally interested in reducing inputs such as energy costs, water, etc.	119	32%
I have heard about irrigation management technologies and I'm interested in learning more about them.	86	23%
I want to meet with other producers who use these techniques.	30	8%
Other	5	1%

Total responses to this question ***367***



Number of irrigated acres that you farm/manage?

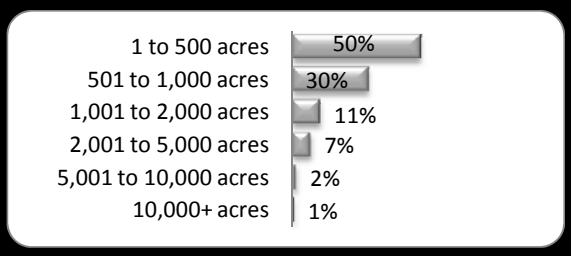
	#	%
1 to 500 acres	32	30%
501 to 1,000 acres	28	26%
1,001 to 2,000 acres	26	24%
2,001 to 5,000 acres	16	15%
5,001 to 10,000 acres	2	2%
10,000+ acres	3	3%

Total acres represented ***173,202 acres****

Total respondents to this question ***107*** ***77%***

****If all surveys were returned the estimated number of acres represented would be 313,600 acres.***

****This represents a reduced water pumping of 54,880 acre-feet and a savings of $4,273,831.00.***

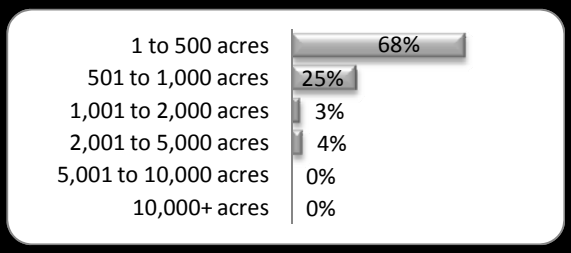


Number of irrigated corn acres that you farm/manage?

	#	%
1 to 500 acres	64	50%
501 to 1,000 acres	38	30%
1,001 to 2,000 acres	14	11%
2,001 to 5,000 acres	9	7%
5,001 to 10,000 acres	2	2%
10,000+ acres	1	1%

Total acres represented ***121,515 acres***

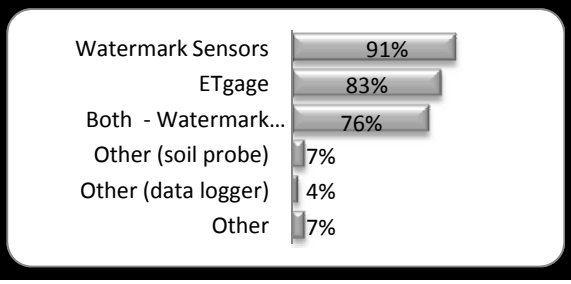
Total respondents to this question ***128*** ***92%***



Number of irrigated soybean acres that you farm/manage?

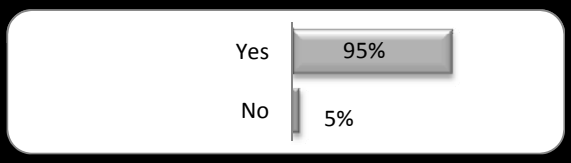
	#	%
1 to 500 acres	81	68%
501 to 1,000 acres	30	25%
1,001 to 2,000 acres	4	3%
2,001 to 5,000 acres	5	4%
5,001 to 10,000 acres	0	0%
10,000+ acres	0	0%

Total acres represented		***66,261 acres***
Total respondents to this question	***120***	***86%***



Check the equipment that you utilized this season to schedule irrigations?

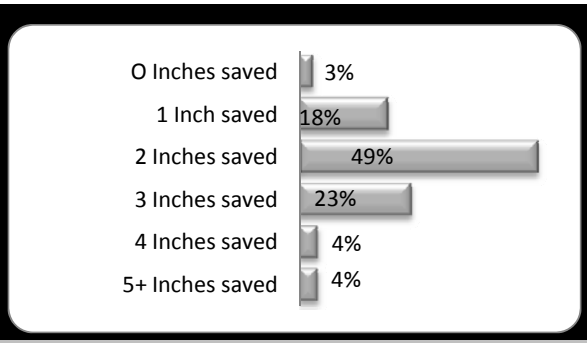
	#	%
Watermark Sensors	127	91%
ETgage	115	83%
Both - Watermark Sensors & ETgage	106	76%
Other (soil probe)	10	7%
Other (data logger)	5	4%
Other	10	7%



Did using this equipment or the NAWMDN information influence you on the amount of irrigation water applied?

	#	%
Yes	125	95%
No	6	5%

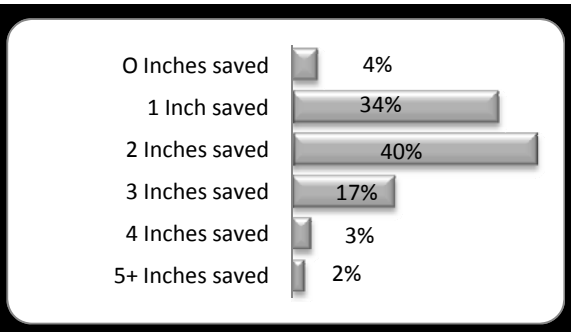
Total respondents to this question	***131***	***94%***



Estimate your water saving (in./acre) in 2009 for irrigating corn:

	#	%
O Inches saved	3	3%
1 Inch saved	19	18%
2 Inches saved	51	49%
3 Inches saved	24	23%
4 Inches saved	4	4%
5+ Inches saved	4	4%
Average Savings Reported	**2.19"**	

Total respondents to this question	***105***	***76%***



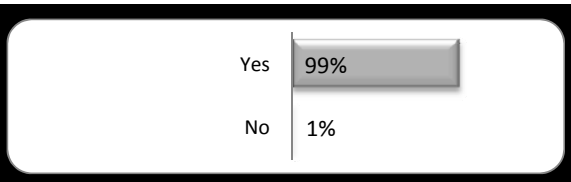
Estimate your water savings (in./acre in 2009 for irrigating soybeans.

	#	%
O Inches saved	4	4%
1 Inch saved	32	34%
2 Inches saved	38	40%
3 Inches saved	16	17%
4 Inches saved	3	3%
5+ Inches saved	2	2%
Average Savings Reported	**1.79"**	
Total respondents to this question	***95***	***68%***

KNOWLEDGE GAINED
As a result of this NAWMDN, I have an improved knowledge of…

Question	* Before Participation	* After Participation	Change
1) I better understand the importance of knowing crop stage of growth and monitoring soil water status in my fields.	*3.28*	4.28	1.00
2) I understand how to use the ETgage® for scheduling irrigation.	*2.28*	4.28	2.00
3) I am confident in using the ETgage® to schedule irrigation.	*2.35*	4.05	1.70
4) I understand how to use Watermark sensors to monitor soil moisture status.	*2.42*	4.34	1.92
5) I am more confident in using Watermark sensors to monitor soil moisture status.	*2.46*	4.24	1.78
6) Using Watermark sensors helped me schedule my first irrigation.	*2.43*	4.29	1.86
7) Using Watermark sensors helped me schedule my last irrigation.	*2.43*	4.35	1.92
8) I have confidence in these newer technologies.	*2.86*	4.35	1.49
9) I benefited from participation in the NAWMDN effort.		4.42	
10) I would recommend this program to others		4.48	

** Based on a scale of 1-5 with 5 being the most knowledge gained/changes made.*



Will you continue to be a participant of the NAWMDN network in 2010?

	#	%
Yes	130	99%
No	1	1%
Total respondents to this question	***131***	***94%***

What did you like best about this program?

A better understanding of usable moisture in the soil and leaving some capacity to absorb rainfall.
A more detailed accounting of irrigation water use on my farm.
Ability to cut back on irrigation use.
Ability to utilize these tools to help schedule irrigation.
Answers, involvement.
Being able to monitor our irrigation practices and seeing how other areas are doing water wise.
Better water management, fuel savings on 1st and last irrigation.
Both save water and know more about the life cycle of the crop (and water needs and when).
Building confidence in monitoring equipment.
Checking sites close to other fields to get a feel for variation from one acre to another.
Cost savings.
Cost share of equipment.
Cost share with NRD is nice. Farmer is still in control and can do how he wants.
Cost share.
Covers the whole (most of it) state.
Daryl Anderson is very helpful.
Education - I worked harder to schedule.
ET gages.
Even though my "gut" feeling was that I should be irrigating, (the neighbors were) my Servi-Tech consultant convinced me that the ET readings and soil moisture levels plus the "Smart Crop" readings showed we could wait for a bit. This gave me confidence to delay irrigating and save some water. Exposure to EG gauge, benefit of ET gauge can replace weekly block reading but not start and stop readings.
Finding the parameters for scheduling irrigation with the watermark sensors.
Gave me an idea of how much moisture was available.
Gave me confidence to delay the first irrigation and apply less water on each irrigation without hurting yield.
Gave me confidence.
Gives a digital (more precise) reading than soil probe.
Gives a very positive way to conserve our natural resources. It continues to educate on newer technology.
Great way to get to know our extension educators.
Gives me another tool to manage water.
Good help from LBNRD if needed.
Great group to learn from.
Having more knowledge and tools available to help me in making my decision about irrigation. Having some tools to help with irrigation ???? And water conservation.
Help from management (NRD).
Help in getting started and additional information.
Helpful training and extension publications for installation and use of sensors.
How helpful the people are in explaining how equipment works and how to use it.
How it helped me to schedule irrigation.
How to use the equipment. I am glad there are readily available instruments to take out the subjectiveness of scheduling by the hand/feel method.
I can call and talk to someone at NRD or Extension if I have questions.
I found it hard to not start irrigation when the neighbors were all running.
I like the technology.
I liked this program because it helped me become more efficient with water use and it helped me become aware of better management practices.
I spent more time monitoring fields and checking them for other problems.
Interaction with others, monitoring water levels at various depths.
It gave me more education and information than I could have gotten anywhere else - hands on.
It helped the crop consultant to schedule waterings.
It made me "think" about my water use.
It relieves some of the stress of knowing whether you are wasting your money irrigating when maybe you shouldn't be irrigating at all.
It saves water.
It shows how to manage our water more efficiently and save our precious resource.
It takes the emotion out of the decision-making as to when to water.

It takes the guess work out of irrigating even though I had a crop scout.
Jenny Rees - she answered every question we had and is so supportive of the program.
Just seeing what other producers were doing.
Know when to start irrigating and when to quit.
Knowing when to irrigate.
Knowing when to schedule my first irrigation and the money and water savings.
LBNRD was there to help me learn and gain confidence in the new sensors.
Learning about soil water movement and capacity, using different irrigation systems.
Learning how much water the crop uses throughout the year.
Learning how to better manage irrigation water to crop growth.
Learning more about crop water use and amount of water in top 4 feet of soil.
Lowering the start up costs helped encourage us to try out these new technologies without much risk. Money saved in irrigation costs, plus saving water. And knowing when to start irrigating and when to stop.
My tenant wanted it so we could save water.
Need more time to learn more.
Network and support.
Networking with producers.
Nice information to know.
One-on-one contact with producers working with extension.
Other area ET gages being used allowed readings to be assured accuracy.
Potential to save water & energy
Program gave me a much better sense of crop water use, soil moisture, depletion, etc.
Research data, new data, every year is different.
Saved water, energy and input costs.
Saving water - saving money.
Scheduling the last irrigation or perhaps the assistance of the extension office.
Seeing all the ET information.
Seeing how other operators used and what they thought of the equipment.
Seeing the water use of plants by their growth and the effects wind and heat have on water loss through evaporation and plant use.
Simplicity of equipment, cost share assistance.
Support from people like Randy Prior and also having another tool to make a more prudent decision on what to do.
Takes the guess work out of water use. Don't overwater and save money and water.
The ability to conserve water and knowing that I was not short changing the crop.
The ability to know how much water the crop uses in a week and how much your subsoil has depleted. The availability of using the watermark sensors and the help received by the extension office.
The chance to try out new technology with the backup of research.
The diligent effort of UNL staff & extension.
The ET gages are very useful.
The help I received and the money it saved and the water savings too.
The helpfulness of the staff at extension in Gage & Saline Counties and the Lower Big Blue NRD.
The knowledge gained about irrigation scheduling. I am a crop consultant and it has helped me to save farmers money with reduced irrigation.
The team work of extension and NRD. Great leadership of Suat.
The technical support you receive from NRD and the Extension Office.
This program gives me information in numbers so I know when to start irrigation and when to stop for the year.
This program gives numbers in terms of evapotranspiration and soil moisture - with numbers we can manage how much irrigation to use.
Training in use of ET & Sensors.
Training on how to use these tools.

What did you like least about this program?

Putting in the moisture sensors
A few glitches in the "Smart Crop" control on our pivots. Also, restraining my instinct to water when the "tools" said to wait.
Actually using the data from the gauges is much harder than we thought. This is not the programs fault, but changing years of habit isn't easy.
Adding the 3 ft. level of an acreage which will short you in the long run.
Can't think of anything. Just needed to get started earlier!
Checking the sensors when it was muddy after a rain to get to them.
Checking weekly ET readings that have not changed.
Cost $.
Entering the weekly data.
ET readings are hard to judge on no-till
Finding the sensors in tall beans.
Fly by the seat of your pants.
Had problems removing sensors and they would get damaged. Suggestions for use in heavy clay soils and procedures for installations, removal, cleaning, & storage would be helpful.
Hard to read moisture sensors using hand reader.
Having those sites that no one is monitoring.
Having to get the information together and to report it.
I don't like these surveys. I am confident in using the equipment and understand it is reducing my irrigation. I am willing to talk to others about it but wish I didn't have to fill stuff out.
I don't use it on all my acres.
I hurt some yields by using the guidelines and had to readjust.
I need to get moisture sensors in early, usually a busy time.
I wish more people could be aware of it.
In order to be accurate it needs to be done at the same time each week.
Installing system.
Installing the equipment.
Installing watermark sensors in hard ground.
It does take time.
Just taking time to read the ET gage & watermark sensors. But a small price to pay for cutting irrigating costs.
Making sure the ET gage was properly filled with distilled water.
Maybe the forms and recording could be easier (use everyone's experience and build a better form).
Meetings got monotonous towards last. Not for producers who have been in the program for several years.
NA
NA
Need more information on watermark sensors in relation to soil types and crop water use.
Need to be able to remove old sites from map.
None
Not knowing if the information was exact.
Not knowing when the next rain was coming and how much. :)
Not one thing.
Nothing at this point. Maybe being uncertain about when to water /readings.
Nothing stands out.
Nothing.
Nothing.
Nothing.
Putting in the moisture sensors putting sensors in and taking them out.
Reporting date for ET information. Liked it better on Monday.
Sensors weren't completely reliable and a couple needed to be reset.
Started years late.
Still guess work on when to irrigate.
Takes more time.

Taking them out and pulling the ends off.
That it was not offered as a program by CP NRD.
That the University is involved.
The added work load each week monitoring the sensor and filling out the paperwork.
The cost.
The ET gage
The inaccuracy of the watermark sensors.
The requirement of soil samples.
There are so many different variables in the chart to determine watering times that I wish there was a way to simplify it.
There is nothing I really disliked. It was interesting and very helpful to me.
Time consuming.
Time needed to take readings when busy.
Trying to remember to read the data.
Tying in sensors with Atmometer. Don't seem to jive. Different so which is correct.
Unsure about reliability of equipment.
Walking out in dewy, wet corn and bean fields to read sensors.
Watermark Sensors
Watermark sensors not reading what I was finding.

How can the NAWMDN program be improved and expanded?

A website so we can ask questions.
Add a "sunny day" or "light intensity" factor for crop maturity prediction, in addition to the GDU.
Advertise to all producers to fully enroll all acres.
As more individuals get them more data will be around.
Automatic sensing of all the "tools." I have time to do the readings but a large farming operation will have to be convinced that the time spend on "readings" is worth it.
Bring in local agronomists and crop consultants to pun in, read, and use the information from the network. Get crop consultants to recommend this to producers.
By going to a more advanced technology such as data loggers that you can receive information via cell phone to a computer.
By making all the NRD board members being involved, they should set the example.
Can it be easier to figure the data from the sensors and ET gage and determine the amount of soil moisture?
Continue to expand and educate.
Continue to work on new technology and teaching.
Cost share, more sites (demonstration) and more press releases.
Cost-share, promotion, agencies getting involved with tracking and recording data (expanding).
Cost-share and promotion for education and producer involvement.
Education.
Equipment consistency; telemetry is needed. From a data entry standpoint, to be more easily entered from a Smartphone. Helping those who aren't highly involved to become more involved. Get remote sensoring to relay the data.
Getting more operators involved.
Getting more people (farmers) involved. Getting more people involved would save more water in the Republican and other NRD's that have people that over pump!
Have more cost share assistance. H
Have separate meetings for new and older-experienced operators who have been in the program for several years.
Having informational meetings at least once a year.
Having more programs to learn more about using the technology. I am still digesting the information and adjustments I need to make for next year. So maybe how to implement changes quickly.
I think it should be "marketed" more. It is a great program that has proven itself. The participation #'s are impressive. I hope they continue to grow. I know some crop consultants are doing similar programs of their own. I would like to see UNL as the mainstream provider of this service in our state.
I think we should just do the same another year and perfect it.

I would like to see rainfall data and watermark sensor data at the locations.
Information on pumpage at certain times of growing season. Just continue bringing the most cost effective ways out to us to improve our ??? And conserve out natural resources.
Keep things as they are.
Make the ET gage easier.
Market, market, market.
Maybe create a spreadsheet to enter sensor readings and ET gage readings that would calculate the next irrigation.
Maybe have a summer field day.
Monthly emailing during growing season with information about using equipment and average usage data. More education and observations to make the most efficient watering decisions.
More hands on training to get up to speed before the season starts.
More irrigation meetings about ET and watermarks.
More knowledge
More networking. Irrigation requirements, daily water use given over the radio stations based on old information or new data? Get crop consultants on board!
More solid yield/cost/savings data from farmers using the meters would be helpful.
NA
Need to rethink guidelines.
Not sure, maybe have more than one sight on pivot to compare moisture readings.
Not sure, need more knowledge.
Offer to more NRD's / Extension areas.
One day at the end of irrigation all probes read safe for stopping irrigation. 3 days later all probes read dry to almost dry. I made one more circle and my corn made 250. I question if it would have had I not made the last circle.
Possibly get more producers aware of it. Realize not all land can be irrigated on the day crops need it. Power interruptions, breakdowns, heat slowing water movement.
Related ET values to no-till production if possible.
Round table discussions of those who are using the program and what are the producers questions.
Since men are visual learners (overall), maybe a u-tube video demonstration of the complete process of installing reading sensors and doing the calculations for irrigation scheduling.
Someone knowledgeable to talk to for questions during the summer.
Stay the course - encourage patrons to recognize and promote legislative funding. Teach more irrigators how to use them.
The word is out, you just have to convince farmers to trust the technology. It took us a year to trust it.
This is the greatest program ever for irrigation. It takes the guesswork out of irrigating.
Truthfully - it hasn't been much of a program. Needs more communication to participants. I've pretty much used watermarks on my own - did ??? one ????, which was great.
We have good funding and will continue to expand rather quickly.
Website with participants data input.
When the ET gage reading has been updated, have some indication on the map.
Change the color on the web page if the weekly reading has been updated.
Would like more data on timing for irrigations - is 90% accurate? I thought my soils were drier than what the watermark sensors said. Should I start watering sooner than wait till 90%? Provide more data on water savings & energy savings more proof that the depletion numbers are correct for our soils.

Please share with the NAWMDN team any thoughts or comments you might have:

Good program.
Great program.
Hope your program continues.
HPCC water use daily estimates seem to high.
I like using the water sensors and ET gage. I hope to learn to use them more efficiently this coming year.
I may have more to add after another year.
I think the program is valuable and all parts of the state will benefit by water savings!
I think the trigger for sensors in clay ground is too high!
I use watermarks but do not do networking yet. This year is busy due to business transition to a new farmer & wife. If all irrigated producers used this equipment we could really increase our water use efficiency.
Keep it up. Thanks!
Keep up the good work, I also like Jenny Rees' newsletter. You feel like you have a contact when you need help.
The newsletters are good and I know of others that like them. The effort she puts in them are well appreciated! Thanks!
Keep up the good work. More people need to understand the importance of saving water and using no-till. I have been no-tilling for 9 years, the benefits are great!
Much better than the spade or probe.
My wide variety of soil types still makes me worry of waiting too long to start irrigation. Need some more information on soil moisture and crop use on my soil types, last year there was a soybean yield loss because of waiting to irrigate.
Push the old data from last year worked the best.
Putting the technology to use made me more confident in the practices I was already using.
Sometimes it's hard to follow the information that the gauges provide.
Stop tearing up goat hills so as to farm it.
Thank you.
Thanks, it makes us all more H_20 conscious
Thanks.
This is an excellent program that is very practical and easy to use. We need more funds to further enhance and advance the program with the latest in electronic surveillance of soil moisture. We need to continue to share with others the good news and how it can work for all knowing that everyone has different conditions, etc.
We will be adding another pivot to our farming operation and watermark sensors are being ordered for the farm. I cannot imagine Irrigating without using the sensors and ET gage.
Thanks for all your work!! When I removed the watermark sensors from the fields, 2 of the sensors pulled off of the