Conference Talks
Gene Stevens, PhD

Dr. Gene Stevens grew up on a family farm near Oakland, Tennessee. He earned a PhD in soil science from Mississippi State University in 1992. His graduate research was on nitrogen and irrigation management with the Gossym-Comax cotton simulation model. He is currently the cropping systems specialist at the University of Missouri-Delta Center at Portageville. His extension program is focused on educating clientele on farming practices to increase crop yields, reduce input costs, and conserve natural resources. He has also conducted research on rice irrigation in South Africa and soil testing in Tanzania.

Irrigation Scheduling — Smart Phone App

The University of Missouri developed an online mobile program (app) called Crop Water Use Calculator (CWU) to help farmers manage irrigation for optimum crop yields and water use. The application estimates water use by analyzing weather station data such as temperature, humidity, wind, and solar radiation. Daily soil water deficits are reported using a “checkbook” system that tallies rainfall and irrigation as deposits and water use, etc., as withdrawals. For each field, users specify latitude and longitude, dominant soil texture, crop planted, planting date, rooting depth, irrigation method, inches of water per irrigation and maximum allowable field water depletion. CWU provides daily balance summaries with dryness index forecasts for the following two days. As soil water deficits worsen, the app alerts the user of the need to irrigate before yield loss occurs. Field validation work for the program was conducted in 2013 and 2014. The program will be available to farmers for free.
**Joe Henggeler, PhD**

Dr. Joe Henggeler has nearly 35 years’ of experience in irrigation from regions ranging from West Africa to Texas to Missouri. He obtained his Masters from Utah State University, the premier irrigation school in the US, and his PhD from Texas A&M. He obtained a BA degree in sociology/psychology from Immaculate Conception Seminary in NW Missouri. Currently he works with the University of Missouri (where he has been for 17½ years), working with irrigation energy issues and irrigation scheduling. In regards the latter, he was the invited author for the chapter on irrigation scheduling for the Irrigation Association’s *Irrigation* (6th ed.), the industry’s definitive text on irrigation. He is a founding member of the professional WERA committee charged with developing methods that lead farmers to adopt irrigation scheduling tools, a committee which he was later to chair twice. As a WERA member he assisted USDA/NASS in developing appropriate questions on irrigation scheduling to be used in their national quinquennial *Farm and Ranch Irrigation Survey*. His background in both an engineering and social sciences field has provided him the skill set to help facilitate irrigation technology transfer. He played the key role in the introduction of both surge flow and sub-surface drip irrigation (SDI) to American farmers.

**WHAT WE’VE LEARNED ABOUT WIRELESS MONITORING: MISSOURI**

Wireless rainfall sensors have proven to help increase yields, and growers have appreciated the ability to receive the resulting data on their computers and cell phones. Wireless sensors are especially beneficial to pivot users because they provide an accurate reading of how much water is put down with each pass. (Many farmers found they were putting down less water than they had believed.) It is probably adequate to place a single soil monitor per pivot, especially if manual sensors had already been placed at this location and two or three other locations. If the manual stations produce similar results for a few weeks, the single wireless location will suffice. A third party should be involved to train customers, install sensors, and retrieve them before harvest to ensure the sustainability of this technology.

**WHAT FARMERS’ SURVEYS TELL US ABOUT IRRIGATED SOYBEAN PRODUCTION**

Since 1987, Bootheel Irrigators have provided important information on irrigation practices in the region. When they first began, irrigated soybeans yields were only about 10 bu/acre greater than dryland yields. By 2012, the yield differential was nearly 30 bu/acre, indicating that area farmers are becoming more skilled at irrigation. Other important data include: Each inch of irrigation water applied produces 4.3 bu/acre. Irrigators who use scientific irrigation scheduling out-yield those who do not by 6.5 bu/acre. Furrow-irrigated soybeans consistently out-yield pivot-irrigated ones (5.3 and 4.3 bu/acre for double-crop and full-season, respectively) due to furrow beds allowing surface drainage to occur. Survey data also indicated the superiority of beds over flat-planting in increasing yield. This was shared with growers ten years before the first published research in the mid-South on this topic. Soybean yields on furrows increase by 2.0 bu/acre when surge flow is used. And for each week of delay of planting after the last week of April, yields decrease by 1.75 bu/acre.
FIVE KEY POINTS ABOUT IRRIGATING FROM THE MISSISSIPPI ALLUVIAL AQUIFER

Pumping plant performance of units drawing water from the Mississippi Alluvial aquifer (MSA) has been evaluated since the late nineteenth century. But it was only several years ago that the first systematic characterization of pumping plants was developed by the University of Missouri. Prior to this, there was no clear pattern of best management practices (BMPs) for pumping out of the MSA. The new analyses found that pivots, whether diesel/propane (d/p) or electric, did not have low efficiencies, and that pumping water level (PWL) had the largest effect on water costs for furrow/flood with d/p. Because of this, it is imperative that efficient wells be drilled and, since PWL increases with flow rate, that farmers avoid inordinately high flow rates (more than three or four thousand GPM) unless absolutely necessary. Also, d/p systems being pumped into cascading basins and duck lakes should be tested to determine what level of RPM produces the cheapest water.

SURFACE IRRIGATION FACTS IN MISSOURI

“Typical” fields have out times of 19.5 hours and a length of 1,224 feet, while “problem fields” have out times of 35.5 hours and a length of 1,446 feet. Packed rows reach the end of their fields six hours before non-packed rolls. Users of Poly-pipe report a cost of $6.35 per acre. Ninety-four percent of irrigators run water down every other row (EOR). The rest are split evenly between running every row (ER) and a combination of EOR and ER. Twenty-eight percent of furrow irrigators use PHAUCET, the hole-size design software, when laying out Poly-pipe, and they employ it on 65% of their fields. Fifty-six percent of furrow irrigators use a full length of Poly-pipe plus another half-length so they can water half their fields at a time, and they employ it on 38% of their fields. More than twenty percent of furrow irrigated fields in the Bootheel make use of surge flow.
**AJ Foster, PhD**

AJ Foster is a MU extension regional agronomy specialist headquartered in Stoddard County and with additional responsibility for Butler, Wayne and Reynolds Counties.

AJ grew up in Jamaica and came to the USA to obtain his education. He received a BS in 2002 in Environmental management and a MS in 2003 in Soil Chemistry from Louisiana State University, a MS in 2010 in Soil Agronomy from Mississippi State University. AJ received his doctorate in Crop Science from Oklahoma State University in 2013. His current research interest is nitrogen management in cropping systems and the integration of technology as decision support systems in the day to day farming operation.

Dr. Foster, whose personal motto is "Facta non Verba", ("Deeds not words"), was not surprisingly one of the first persons to step forward and begin to organize this conference.

**AERIAL ROBOTS (A.K.A., DRONES)**

Agriculture is the industry poised to reap the greatest benefits from unmanned aerial vehicle (UAV) technology. These high tech tools are a great addition to the farmer’s tool kit to maximize profitability and minimize environmental impact. This presentation will discuss UAVs and their potential impact on decision-making in agriculture. Key issue include regulations, permits, the value of a bird’s eye view, various available sensors and some of the many potential applications.
Brad Williams

Mr. Williams started growing cotton and soybeans fulltime in 1993 in his farm which lays about as far south as you can be, and still be in Missouri. Prior to full-time farming, Mr. Williams was employed with the Soil Conservation Service, as a field technician. When he began farming the SCS experience helped him approach farming from a more technical angle. Mr. Williams drills wells for himself and his neighbors, so he is cognizant of pumping water level, drawdown, and pump performance. His farm in Cardwell is the location of one of MU’s automatic weather stations.

**Using Information from Your Water Table**

Irrigation pumping is as much about what’s happening underground, as it is about what’s being delivered to your pipelines above ground. Farmers should be testing things like static and pumping water levels and flow rate. This is especially true when irrigation water is high in iron and the potential for bio-fouling to occur is great. This paper will discuss monitoring water levels and treating irrigation wells.
**Steve Jackson**

Steve Jackson has been involved in farming using irrigation for over 40 years in the Cardwell, MO area. After carefully studying its potential, Steve purchased a Written-Pole® (W-P) 40-hp electric motor in 2009 for use on one of his 15 irrigation wells that irrigated a 160-acre field acres. Since the W-P is a true single-phase motor he did not have to bring in 3-phase service. Steve has worked with his electricity provider, Pemiscot-Dunklin Electric Coop, on this innovative technology. After the irrigation season is through, Steve moves the W-P to a 28,000 bushel grain bin.

**Experience in Using Written Pole Motors – True Single-Phase Motors**

Steve discusses the use of Written-Pole electric motors on his irrigated farm near Cardwell, MO. Since the W-P motor is a true single-phase machine, Steve avoided the cost of having to also bring in 3-phase power when he “took the plunge” six years ago. Because of its innovative design the W-P technology can be run on single-phase for pump sizes up to 100-hp; it also means that no phase-converter is required (which makes his coop happy). Steve will discuss the aspects of W-P, including efficiency, maintenance, service, and choices available to him when he pioneered this method of pumping water in the SEMO area.
Gary Buenemann

Gary Buenemann is an employee at CK Power, which is based in STL and specializes in new engines, engine rebuilds/overhauls, and in-field repair. CK Power is the exclusive distributor for John Deere engines in the Midwest and Rocky Mountain region, and is familiar with the EPA regulations regarding Tier 4 engines that took place this year. Gary has worked at CK Power for than 30 years. In that time Gary has spent most of his time as a service technician, performing maintenance and repair on engines and generators. Gary now is the instructor for CK Power training classes, and most recently has become the Emissions Compliance Administrator for CK Power.

Diesel Engines and the Tier System

There is no such thing as the “simple guide” to EPA mandated new diesel engine exhaust emission standards. Today the Clean Air Non-road Diesel Rules has reached the Tier 4 rule, and the standards for irrigation (i.e., non-road diesel) are at their most stringent. Horsepower, fuel and exhaust chemicals, maintenance schedules, initial and repair costs, and a host of other factors are items that the irrigation famer must become proficient in. Luckily, the new emission standards will impact only new equipment. American irrigated farms might come to look like downtown Havana, Cuba where ’57 Chevies are cobbled together to keep running, because new ones aren’t practical.

This talk will clarify the ins-and-outs of the EPA’s Tier system for diesel irrigation engines.
Joe Massey, PhD

Joe is an agronomist with the YMD Joint Water Management District located in Stoneville, MS. With the support of the Mississippi Rice Promotion Board, he has been working with producers to develop water- and energy-conserving rice production systems since 2003. Developed a You-Tube video presentation on MIRI.

Earl Kline

Earl has been using MIRI for over 15 years and AWD for seven years to grow rice with approximately 30% less water than when MIRI is used by itself. In a typical growing season, he will apply about 20 A-in of water per acre of rice. He farms 3,000 acres of rice, corn and soybeans with his uncle, Warren Satterfield in Bolivar County, Miss., utilizes multiple-inlet irrigation to put water into each individual paddy rather than transferring it from one pad to another in a regular cascade flood.

What are IWMs & How they are Assisting Mississippi Rice Farmers

For the past seven years, Earl and Joe having been working together to extend the water and energy savings of multiple-inlet rice irrigation (MIRI) by managing flood depth to maximize rainfall capture and reduce over-pumping. In both dry and wet years, irrigation use has been well below average for comparable MIRI-only fields while grain yields have been maintained. Their recently published work and weed and disease control issues in intermittent flood management will be discussed. A brief overview of the MIRI module in Pipe Planner as well the California-based rice greenhouse gas emissions reduction program will be provided. The South typically enjoys an abundant water supply.

Fig. 4. Multiple-inlet irrigation is one of the tools that allows rice farmers to pump up a field quicker, which saves water, energy, labor and time.
with its many rivers, lakes, ponds and bayous that are an integral part of the landscape. However, in some areas, the water table is declining and underground aquifers do not necessarily translate into an infinite amount of groundwater. As a result, farmers and researchers are working hand in hand to help preserve this valuable resource, while, at the same time, keep rice production viable for many generations to come.

Some of the on-farm research that we do is fairly standard, while, in other cases, we push the boundaries on ‘How low can we go?’ type work and still grow a nice rice crop and capture more rainfall,” he says. “We’re trying to save water and the energy input – diesel or electricity – that it takes to move water around the field. In agriculture, one size does not fit all, so we work to create different options for our growers, a group that continually refines their practices and are trying to minimize the drawdown on the alluvial aquifer.”

“For example, if we have a 40-acre field with five pads in that field, we treat each pad as its own separate field by pumping water into it through gate holes in the plastic tubing,” he says. “By doing this, we are able to control our nutrients and reduce pumping. We can keep the water level consistent across the whole field instead of having deeper water at the top.

“By keeping the water level lower, we can make the rice tiller,” Kline adds. “And the more tillers a rice plant has, the more potential yield it has.” Multiple-inlet irrigation also assists in herbicide activation and can help reduce coldwater areas. Logistically, Kline says he can roll out the tubing on a 40-acre field in about an hour and flood the field in 24 hours, which is half the time it takes to water the field using a cascade flood approach. “That’s where my pumping savings comes in,” he says. “Also, since I am not trying to force the water upward to run over a spill, I can pick the spill up higher and have room to capture more rainfall.”

**WATER USAGE STUDIES OF MAJOR MS DELTA CROPS**

The Yazoo Mississippi Delta Joint Water Management District (YMD) is located within 17 counties in western Mississippi close to the Mississippi River. In 2002 they initiated a program monitoring water use on farms within the district. In its first year it monitored 83 sites on farms used for cotton, soybean, corn, and rice, reporting the annual acre-feet used at each site. In subsequent years it added catfish farms among the monitored wells. The number of monitored sites each year grew to > 200 in subsequent years. In 2003 it added energy and water cost per acre to data being collected.

Monitoring of water use was done by measuring flow rate versus consumed electricity three times a season on each farm. In this manner they could correlate water use to KWHs, and could also break water consumption down by month. Devices that measured low levels of vibration were installed on pipelines near the electric motors so that hours of actual on-time were collected for the season.

The water use by crops was broken down into subsets (e.g., zero grade, contour, multiple inlet, and straight levee for rice; pivot, contour, dryland, straight furrows, zero slope, and furrow with PHAUCET for row crops), and water use and energy costs were reported by subsets.

This water use dataset comprising 13 years of data represents valuable information to agricultural economists, water table modelers, and others throughout the mid-South. Differences in ET/effective ppt from various locations in the mid-South versus ET/effective ppt from the YMD area will be shown and the transferability of YMD results to other locations will be discussed.
Freddie Lamm, PhD, PE

Dr. Freddie Lamm is a professor and research irrigation engineer at the KSU Northwest Research-Extension Center in Colby, Kansas with a 100% research appointment.

Dr. Lamm grew up on a rainfed combination livestock-grain farm in Wooldridge, Missouri. He received a BS in 1978 and a MS in 1979 from the University of Missouri-Columbia in Agricultural Engineering. Lamm received his doctorate in Agricultural Engineering from Kansas State University in 1990. Dr. Lamm has conducted irrigated water management and irrigation systems research for Kansas State University at Colby, Kansas since May 1979 (35 years). His current research is with development and management of advanced irrigation systems [In-Canopy Center Pivot Sprinklers and Subsurface Drip Irrigation (SDI)] for irrigated crop production, particularly for field corn which is the predominate irrigated crop in the region.

In-Canopy Sprinkler Irrigation: Ensuring Equal Opportunity

Each plant should have an equal opportunity to receive the water applied by sprinkler irrigation. Unfortunately, this can be undermined by improper marketing, design, and installation of equipment, as well as through inappropriate farming operations and irrigation mismanagement. Key issues include irrigation application symmetry, spatial orientation of sprinkler travel with respect to crop rows, and the seasonal longevity of the sprinkler pattern distortion caused by crop canopy interference (especially when the irrigation is applied within or near the crop canopy). These issues must be carefully considered by crop producers, irrigation consultants, and the industry that supplies the irrigation equipment.
Mark Nussbaum, PE

Mark Nussbaum is a civil engineer with the USDA-Natural Resource Conservation Service, and serves as Area Engineer for the southeast Missouri region. A graduate of the University of Missouri, Mark helps farmers and landowners create and install sound technical solutions to agricultural and environmental problems. He has helped develop drainage and sub-irrigation methods and technologies that enable producers to install systems that are economical to operate and beneficial to the environment. Mark is a licensed professional engineer and has practiced engineering for 25 years.

John Hester, PE

John is an Area Engineer for the USDA-Natural Resources Conservation Service in Bootheel of Missouri. John is a native of southeast Missouri and graduated from the University of Missouri-Rolla with a degree in Civil Engineering in 1994. John has primarily worked with producers helping with their irrigation and drainage issues. In recognition of his work in irrigation, John received the Advancement of Surface Irrigation Award from the American Society of Agricultural and Biological Engineers in 2007. John is a licensed professional engineer in the state of Missouri.

Sub-Irrigation: Drains when Wet, Irrigates when Dry

This study used computer modeling to compare the benefits of installing drainage/sub-irrigation systems in various layout patterns in ten corn producing soils commonly found in Missouri. The DRAINMOD 6.0 computer program was used to analyze soil moisture and plant conditions using 35 years of weather data. Projected corn yield increases were weighed against total system costs to determine optimum drainage and sub-irrigation system layout.
Earl Vories, PhD, PE

Earl Vories is an agricultural engineer with USDA’s Agricultural Research Service Cropping Systems and Water Quality Research Unit at Portageville, Mo. He has worked for over 26 years in the Lower Mississippi Water Resource Area and is a nationally and internationally recognized authority on water management in humid areas. His work has been documented in over 200 technical publications, including 57 refereed journal articles.

Growing Rice with Center Pivots

Continuous-flood irrigation is the most common method for U.S. rice production, but it requires more than twice the irrigation water of methods used for other Mid-South crops. Center pivot irrigation can reduce water use in some cases and allow rice into the crop rotation when flooding is not practical. This talk will discuss research at the University of Missouri Fisher Delta Research Center, which has explored the development of an experimental crop coefficient and optimal irrigation management, and has compared center pivot yield, water use, and economics to flooded production.
Michael Aide, PhD, CPSS

Dr. Michael Aide is an educator and scientist devoted to introducing students to the discipline of soil science and crop production. Michael has undergraduate degrees in mathematics, chemistry and soil science from the University of Wisconsin and graduate degrees in soil chemistry from Mississippi State University. Michael’s professional life started in 1982 when he accepted the assistant professor position in the Department of Agriculture at Southeast Missouri State University. Presently, Michael is a chairperson of the department and oversees development of the department’s faculty, programs and auxiliaries. The Department of Agriculture’s teaching and research holdings include: (i) the David M. Barton Agriculture Research Center, (ii) the Horticulture Greenhouse Complex, (iii) the Nemanick Alternative Agriculture Gardens, (iv) the Biomass/Biofuels facility in Sikeston. Dr. Aide and the faculty support the Missouri Rice Research and Merchandizing Council in operating the Missouri Rice Research Farm and the Missouri Rice Breeding Program.

Michael’s research interests are soil chemistry and rice soil fertility. Recently, several publications concern (i) modeling of lead (Pb) speciation and surface adsorption on phyllosilicate assemblages, (ii) the soil chemistry of arsenic and its uptake patterns in rice, and (iii) nitrate mitigation in irrigation systems.

Michael is currently Past President of the Missouri Academy of Science and is also an adjunct professor at the Department of Soil Science and Atmospheric Sciences at the University Missouri-Columbia. Michael’s teaching opportunities include (i) soils, (ii) soil fertility and plant nutrition, (iii) plant pathology, (iv) weed science, and (v) water management. The plant and soil sciences curriculum received a major boost when the Department of Agriculture placed this program at Southeast MO State University at Sikeston, Malden and Kennett. Dr. Aide is the author of numerous grants, all of which serve the interests of the Department of Agriculture and Southeast Missouri State University.

FURROW IRRIGATED RICE IN MISSOURI

Furrow irrigated rice (Oryza sativa L. ‘indica’) is gaining awareness in Missouri and Arkansas because of (i) accelerated rates of ground water depletion, (ii) pumping costs are related to the water table depth, (iii) graded land is already a landscape feature, (iv) cost of levee construction and removal, (v) more rapid field drying, and (vi) less dependence on areal application. The advantages of delayed flood irrigation remain formable and include: (i) an already understood practice in terms of water management, (ii) currently higher yield potential, (iii) nitrogen management is standardized, (iv) crop insurance availability, and (v) appropriate weed management strategies exist. This presentation stresses recent investigations into soil and plant tissue nitrogen assessment, where the likelihood of nitrification-denitrification processes are problematic for furrow irrigated rice and new nitrogen strategies are proposed.
H. C. (Lyle) Pringle, III, MS

Mr. Lyle Pringle grew up in Alexandria, Louisiana working with the family cattle farm and a custom hay baling operation. He received a BS and MS from Louisiana State University. He is an associate agricultural engineer with Mississippi State University located at the Delta Research and Extension Center, Stoneville, MS with a 100% research appointment. He has been conducting irrigation and tillage research since 1982. His current research is with irrigation scheduling with soil moisture sensors in cotton, corn and soybean production systems to maximize yield with the least amount of water.

WIRELESS SOIL MOISTURE MONITORING – MS PERSPECTIVE

This presentation will discuss experiences with location, installation, and operation of electronic soil moisture sensors and associated wireless communication systems that we have worked with to date.

IRRIGATION SCHEDULING – USING VARIOUS MOISTURE SENSORS

This presentation will discuss some of the basics of soil water characteristics and electronic soil moisture sensors and use of these sensors in scheduling irrigation in the Mississippi Delta.
**Preston Marthey**

Preston works out of the US OptiSurface offices in Jonesboro, AR and has experience in various land-leveling software packages and machine control applications. He is the Global Sales Manager for OptiSurface and helps to train new users to the benefits and uses of the OptiSurface software. He is familiar with the Bootheel, having formerly worked with Spectra Positioning Inc. out of there Jonesboro, AR office and Baker Implement Company out of their Blytheville, AR office.

**LASER- versus GPS-controlled Land Leveling**

Preston Marthey of OptiSurface (Jonesboro, AR) will demonstrate how farmers, agricultural consultants, and earthmoving contractors can improve farm profitability through optimized water management. The machine control systems used in precision leveling are of two types.

The first method, and the one we are the most familiar with, use a rotating LASER beam that emulates from equipment mounted on a tripod or stand in the field (similar to the rotating beacon in an airport light tower). The system can be set to have the beam rotate with both a dialed-in main slope and side slope. The rotation forms (ugh, geometry) a single plane. The earthmoving equipment has a vertical, 1 to 3 foot-wide array series of receiver sensors that can detect the LASER beam. If the beam strikes a receiver located in the bottom of the array, then the scraper is too high and hydraulics are used to lower the blade to increase the depth of cut. When the beam strikes the receiver in the top of the array, then the scraper is too low and hydraulics are used to raise the blade to finished elevation. When the beam strikes the sensor located in the middle then the scraper is at the correct depth. In the end, the plane of the land surface will be perfectly parallel to the rotating plane of the LASER. Fixed position planar (2D) systems cannot easily be used to form anomalies from land surface, such as raised berms for roads, etc.

The second method uses very accurate GPS (3D) signals coming from orbiting satellites. In this case, anomalies to the normal land surface can be dialed in. Also, cuts can be made to the existing land surface at different slopes, instead of one constant slope. As long as the downstream slope is either level with or lower than the upstream slope, water will move in the downstream direction. This can lead to great decreases in cuts. OptiSurface, one of several software packages that work with GPS signals, can predict the amount of standing water in the field after a rain or irrigation-with and without furrows & beds. This feature allows an estimate of crop loss due to water logging (ponding).
Brian Leib, PhD

Dr. Brian Leib, an Agricultural & Biological Systems Engineer, has been working in research and extension of irrigated agriculture for nearly 30 years. He has performed irrigation research projects in many crops: alfalfa, small grains, cantaloupe, apples, cherries, peaches, wine grapes, mint, tobacco, forage grasses, pumpkins, tomatoes, peppers, lettuce, cotton, and soybeans. These projects have been conducted in a variety of climates spanning arid and humid regions using many different types of irrigation systems including surface, sprinkler, and drip irrigation. He has also worked to improve water management through developing irrigation scheduling software, testing soil water sensors, establishing weather data networks, improving irrigation systems to control salinity, implementing deficit irrigation strategies, reducing erosion from furrow irrigation, and capturing rain water for utilization in high tunnel irrigation. He received his B. S. and Ph. D. degrees from The Pennsylvania State University in Soil & Water Engineering and also an M. S. from Colorado State University in Irrigation Engineering. He has been a faculty member at Colorado State University and Washington State University. He is presently an Associate Professor in the Biosystems Engineering and Soil Science Department at the University of Tennessee.

**WHAT WE’VE LEARNED ABOUT WIRELESS MONITORING: TN PERSPECTIVE.**

There are four basic approaches to obtain soil water readings for irrigation scheduling: 1) in-field data collection, 2) edge of field logging, 3) computer/smart phone access and 4) portable sensors/data loggers. Delineating irrigation scheduling approaches for soil sensors will assist producers and Ag professional determine which method is best for their farm or business. Finally, 2013 & 2014 soybean irrigation trials will be examined to determine whether irrigation scheduling tools lead to maximum yield with minimum irrigation.
**Chris DeClerk**

Mr. DeClerk is an irrigation specialist who has worked at Delta Plastics of the South since 2010. He received his BA in Biological Science with an emphasis on Fisheries and Wildlife Management from the University of Arkansas, Little Rock. He was instrumental in the development, implementation and adoption of Pipe Planner, a web-based software designed for maximizing polytubing irrigation efficiency, and he has successfully provided consulting service for over 100,000 acres of farmland throughout the Mississippi Delta, delivering savings in irrigation time, labor, fuel and groundwater resources. He has also applied polytubing irrigation techniques in Brazil and Argentina.

**DESIGNING POLY-PIPE MANIFOLDS: PHAUCET / PIPE PLANNER**

Methods of low-cost irrigation have sustained for generations, but models have proved that current pumping rates are rapidly increasing and sustainable recharge cannot keep up. To sustain low-cost irrigation throughout the Delta, we have to become better managers of our resource. Without certain management practices, costs to irrigate crops will only rise in the future. Adopting Pipe Planner, a web-based computer application, is the one of the cheapest and most effective methods of conserving water on the farm. Every field, whether square or highly irregular, can benefit from the use of Pipe Planner. It helps keep the polytubing tight, furrows water out more evenly, and ultimately, saves water and money for your farm. On average, users that have implemented this tool on their farm see as much as 25% savings in fuel costs.
Ray Benson, MS

Ray Benson has worked for the Division of Agriculture and USDA-ARS for a total of 17 years. Much of his work has dealt with irrigation timing/termination, and his recent work involves demonstrating irrigation tools that help improve efficiency. He currently serves as the Staff Chair of the Mississippi County Extension Office. Ray received his BS in Agronomy and MS in crop physiology from the University of Arkansas-Fayetteville, and he is expecting to receive his PhD in Environmental Sciences from Arkansas State University in 2016. His dissertation topic involves determining cotton management zones for choosing varieties and populations, especially regarding soil/water factors. He has also farmed his family’s 400 acre farm in Northeast Arkansas for the past ten years (as a “sideline” job).

MANAGEMENT DEMONSTRATIONS IN NORTHERN ARK.

Much of Ray’s work has involved irrigation timing and termination, and recently he has also begun demonstrating irrigation tools that help improve efficiency. This presentation will highlight some of the on-farm demonstrations he has conducted over the past three years. A portion of the talk will be devoted to addressing potential pitfalls of irrigation tools such as surge valves, ET gages, and computerized hole selection programs. Ray will also discuss what the majority of producers have found to be most helpful.
Andrea Phillips-Jones, MS

Andrea Phillips-Jones has more than ten years of experience studying irrigation timing, water use efficiency, and the effects of furrow irrigation patterns on plant growth, root growth, shedding, maturity, and yield. For her master’s thesis, she studied controlled release nitrogen fertilizers.

She tests 31 cotton varieties in six locations in the Missouri Bootheel on various soil type and conducts strip variety trials on cooperator farms in the Bootheel to compare new and established varieties under grower conditions. She is also involved in the Delta Missouri Soil Health Alliance to help raise awareness about soil and water conservation in the Bootheel.

Irrigation Scheduling – Woodruff Charts

A recent study found cotton to cutout prematurely if farmed dryland or if irrigation is started too late. Using the full growing season maximizes yield and improves fiber quality. Genetics controls much of the fiber length, but if cotton is stressed during its first fifteen to twenty-one days, fiber length will shorten in the boll. Good irrigation helps prevent this. If you don’t have time to employ computer-based irrigation scheduling, there is a quick, easy, and effective method called a Woodruff Irrigation Chart that uses historic weather data and modern crop coefficients to determine when to irrigate. This stop on the blue tour will give you “hands-on” experience with the Woodruff method. You will create a chart and pencil in the weather data to determine proper irrigation dates.
Gordon Cunningham

Gordon Cunningham is the co-owner (with his father Joe) of Cunningham’s Gas in Helena, AR, established in the 1940s. He believes propane-powered engines are the future of irrigation; in the past few years he has gone from zero to servicing one hundred engines. Located deep in the Mississippi Delta, Cunningham finds that his clients are increasingly adopting propane to quench crops of corn, beans, rice, cotton, milo and wheat, as it’s clean burning, saves time and money, and has more BTUs than natural gas.

A NEW GENERATION OF PROPANE ENGINES

Propane-powered irrigation engines are becoming increasingly popular, as propane is cleaner-burning than diesel and not as easily stolen in remote locations, and it is easier and cheaper to deal with than natural gas, with more BTUs. Furthermore, the Propane Education & Research Council’s (PERC) Propane Farm Incentive Program lowers the initial cost of purchasing a new Environmental Protection Agency (EPA)-certified propane irrigation unit by offering participating growers a $400 incentive based on a per-liter engine displacement of up to 10.3 liters, for a total of $4,120. Eligible farmers report propane’s performance details to PERC for at least one season, which aids in future product development. Diesel engines will also have to meet new EPA Tier 4 emissions standards in 2014, which will make propane engines even more cost-effective by comparison.
Matt Rhine, MS

Matt is expecting to receive his PhD in December 2016 in plant breeding from Texas A&M University. His dissertation topic is *Improving Soybeans for Increased Productivity on Specific Soil Types*. Matt’s Master’s thesis was on soybean flood resistance.

**Flood Tolerance of Soybeans**

Soybeans, in general, are sensitive to water-logging damage, especially during earlier stages. Bedding up helps reduce the susceptibility of the soybean, but in a rice-soybean rotation, this practice is impractical. One option is to use soybean varieties that have higher degrees of flood tolerance. Dr. Grover Shannon was the key investigator in this research, and Matt wrote his master’s thesis on it. This research has had large amounts of grower interest and support.
David Reinbott, MS

David is the Agriculture Business County Program Director for Scott County. His presentations on the commodity market futures are always well received at educational meetings. Reinbott is part of a team of regional specialists who keep area farmers informed of upcoming educational events.

Reinbott maintains an excellent irrigation economics web site with current equipment costs and annual inputs costs for irrigation. Since many of the Bootheel farming enterprises are joint owner/lease arrangements his web page analyzing tolls can be adjusted for this situation.

COSTS TO WATER CORNERS / Irr. & the Farm Program

On a per acre basis, the area under the pivot and that reached by end guns are the cheapest to water. However, this can leave 22% of the field from being watered; for a typical quarter-mile pivot this is about 34 acres, and this can be problematic, especially on sandy soils. Pivot manufacturers make arms that can reach out and apply water to a significant portions of the “dry corners.” The per-acre investment cost to water these 30 odd acres is much higher than investment paid to water the first 125 acres. Although the per-acre investment cost is higher, it may be a wise investment—especially with the increased reliability of these arm systems.

The new farm program may incentivize the employment of irrigation.

Jim Cook

Mr. Jim Cook, with Ark-Mo Well Drilling and Service Co. in Steele, Mo., is considered one of the best irrigation well drillers in the entire state. Cook is active with the Missouri Water Well Association, currently serving as secretary and director of the Continuing Education Committee.

Cook estimates that around 600 wells are drilled in a normal year in the Bootheel. Cook says there is a difference in the type of well a municipality wants versus what a farmer wants.

Fig. 8. Jim Cook of Ark-Mo Well Drilling inside his office in Steele,
**Drilling a Quality, Affordable Irrigation Well**

There is a good deal of difference in what a farmer might pay for a well then what a municipality might pay for a high-end well in the Bootheel area. The largest factor by far for irrigators on the cost of water for flood/furrow systems, is the pumping water level (PWL). Thus the well driller needs to use practices that will make the well efficient so that deep PWLs are avoided. Such things as the type of gravel pack and the correct combination of gravel pack/screen size are important. However, at some point the additional costs involved in making “the perfect well” can become too much. Therefore, the owner and the well driller must seek to have a quality well that is also affordable.

**Jason Krutz, PhD**

Dr. Krutz is an Extension/Research Irrigation Specialist with Mississippi State University based at the Delta Research and Extension Center in Stoveville, MS. Prior to that Jason worked as a research soil scientist for the USDA/ARS in Stoneville. A native of Blytheville, Ark., he holds a doctorate in agronomy from Texas A&M and master’s and undergraduate degrees in agronomy from the University of Arkansas.

Krutz is the Principle Investigator of the joint MSSB and USB grant, *Irrigation Water Management for Southern Region Soybean Growers* that will attempt to increase irrigated soybean yields in the mid-South by 20% by the year 2019.

**Benefits from PHAUCET / Pipe Planner & Wireless Soil Moisture Sensors.**

The Row-crop Irrigation Science Extension and Research (RISER) Program focuses on means to improve furrow irrigation efficiency and timing for various Mid-South production systems. In this break-out session, we will discuss environmental, agronomic and economic advantages associated with the proper implementation and utilization of computerized hole selection, surge valves, and soil moisture sensor technology.
Merritt McDougall, MS

W. Merritt McDougall is currently finishing up at the University of Arkansas in Fayetteville with a Master's Degree in Biological Engineering. He conducted energy efficiency research on irrigation pumping plants using an innovative pump monitoring approach. This study uses a time-integrated, remote sensing approach to test irrigation pumping plant performance trends, and evaluate their instantaneous performance using the Nebraska Pumping Plant Performance Criteria. This research will aid in identifying case-specific causes of poor pumping performance and provide recommendations to farmers on how to optimize these systems from an economic and/or energy efficiency basis.

Previously, McDougall was project manager/analyst on a variety of rice studies, including one to help optimize urea application on pre-flood rice, and one that modeled DD-50s and rice internode movement (for making recommendations on urea application dates). He hopes Seeking employment in a related field with special interest in the oil and gas industry, hydrogeology, and stream/watershed restoration.

A Pump Monitoring Approach to Irrigation Pumping Plant Testing

This presentation will discuss research that has been conducted using pump monitors and telemetry to evaluate irrigation pumping plant efficiencies in Arkansas. Traditionally, pump tests have been performed at only one given point in time. The monitoring approach used in this study made it possible to continuously evaluate the performance of approximately 50 diesel and electric pumping plants throughout the state across entire irrigation seasons. This presentation highlights the challenges and advantages of using this approach to pumping plant testing.
Chris Henry, PhD, PE

Dr. Chris Henry was a driving force in the formation of the Delta States Irrigation Consortium. In 2013 he organized the Irrigation Pumping Plant Performance Testing Workshop in Stuttgart, AR, where he gathered eleven irrigation specialists from seven states. Prior to that he and Dr. Bill Branch of LSU served as chief editors for the Irrigating Smart series, a group of thirteen factsheets on important management and safety issues for mid-South irrigators, which called on the expertise of ten irrigation specialists from half a dozen mid-South universities.

VARIABLE FREQUENCY DRIVES – A PRIMER: TOOL FOR FLUCTUATING WATER TABLES

Flood/furrow systems watered out of the northern stretches of the Mississippi Alluvial aquifer pull lots of water from shallow depths; these pumps are classified as High Flow/Low Head (HF/LH). Total dynamic head (TDH), which includes pumping water lift, friction loss in column pipe, and outlet pressure is only about 40-50 feet. When water tables drop a mere 5 feet, TDH increases by 10-15% thereby dropping flow rate by at least that much. Modeled and on-farm test results showed that such a 5-foot drop in water table resulted in a 25% drop in flow. Pumps driven by normal electric motors are subject to these losses. However, diesel- and propane-powered pumps skirt this problem when the operator increases engine RPM. Electric motors equipped with variable frequency drives (VFD), can likewise skirt the problems associated with a fluctuating water table. Additionally, VFDs have other advantages, such as possibly being able to use single-phase electricity.

WHAT WE’VE LEARNED ABOUT WIRELESS MONITORING: AR PERSPECTIVE

Wireless soil moisture monitoring has recently received much interest in Arkansas. Several master level research projects are being done on this topic.
CONFERENCE WORKSHOPS
**WORKSHOP: SURFACE IRRIGATION**

**Joe Henggeler, PhD**

Dr. Joe Henggeler has nearly 35 years’ of experience in irrigation from regions ranging from West Africa to Texas to Missouri. He obtained his Masters from Utah State University, the premier irrigation school in the US, and his PhD from Texas A&M. He obtained a BA degree in sociology/psychology from Immaculate Conception Seminary in NW Missouri. Currently he works with the University of Missouri (where he has been for 17½ years), working with irrigation energy issues and irrigation scheduling. In regards the latter, he was the invited author for the chapter on irrigation scheduling for the Irrigation Association’s *Irrigation* (6th ed.), the industry’s definitive text on irrigation. He is a founding member of the professional WERA committee charged with developing methods that lead farmers to adopt irrigation scheduling tools, a committee which he was later to chair twice. As a WERA member he assisted USDA/NASS in developing appropriate questions on irrigation scheduling to be used in their national quinquennial *Farm and Ranch Irrigation Survey*. His background in both an engineering and social sciences field has provided him the skill set to help facilitate irrigation technology transfer. He played the key role in the introduction of both surge flow and sub-surface drip irrigation (SDI) to American farmers.

**Preston Marthey**

Preston works out of the US OptiSurface offices in Jonesboro, AR and has experience in various land-leveling software packages and machine control applications. He is the Global Sales Manager for OptiSurface and helps to train new users to the benefits and uses of the OptiSurface software. He is familiar with the Bootheel, having formerly worked with Spectra Positioning Inc. out of there Jonesboro, AR office and Baker Implement Company out of their Blytheville, AR office.

**WORKSHOP OVERVIEW**

**Time:**
Thursday, Dec. 18, 2014 (1:40 PM – 4:30 PM)

**CCAs:**
2 ½ hours (Soil and Water) (applied for)

**Instructors:**
Joe Henggeler, PhD (U of MO - Fisher Delta Res. Center)
Preston Marthey (Opti/Surface - Jonesboro, AR)

**Target Audience:**
Farmers using surface irrigation
Farmers with their own land-leveling equipment
Custom land levelers
Consultants doing land-leveling designing

**Main concepts to be discussed:**
- Evaluating your surface irrigation system.
- Surge flow.
- Cut-back irrigation.
- Land-leveling with LASER systems vs with GPS systems.
- Matching guidance systems to your personal needs.
PART 1: FURROW IRRIGATION: TECHNOLOGY AND MANAGEMENT TIPS

SYNOPSIS: Joe Henggeler will discuss how to analysis current performance of your flood irrigation system. Methods for improvements to be discussed will be correct furrow length, the importance of discharge uniformity out of the polypipe, packed vs. non-packed rows, surge and cutback flow. Available government funding opportunities for furrow system improvements.

In the former days of “dollar diesel” there was not much concern about improving furrow/flood efficiency, especially if water supplies were abundant. However, three things came together forming “the perfect storm” affecting farmer attitudes about furrow efficiency: (1) the decline of water tables in the lower MS. Valley Alluvium, (2) the steep increase of diesel costs starting in 2004, and (3) the widespread use of yield mapping.

The first step in improving efficiency is to analysis your system’s current performance. This can be done by examining overall field uniformity (e.g., yield maps, aerial photos [drones?], and satellite images from Google Earth), studying furrow out-times, and uniformity down the row.

Methods of improving furrow irrigation efficiency to be discussed will be soil moisture sensors, correct flow stream, surge flow, and cut-back flow.

PART 2: THE IMPORTANCE IN GUIDANCE METHOD – LASER VERSUS GPS

SYNOPSIS: Preston Marthey will discuss how farmers, agricultural consultants, and earthmoving contractors can improve farm profitability through optimized water management using land-forming. Types of guidance systems will be discussed. Choosing the correct guidance system for commercial earthmovers versus the farmer versus the consultant.

Guidance Systems

The first method, and the one we are the most familiar with, use a rotating LASER beam that emulates from equipment mounted on a tripod or stand in the field (similar to the rotating beacon in an airport light tower). The system can be set to have the beam rotate with both a dialed-in main slope and side slope. The rotation forms (ugh, geometry) a single plane. The earthmoving equipment has a vertical, 1 to 3 foot-wide array series of receiver sensors that can detect the LASER beam. If the beam strikes a receiver located in the bottom of the array, then the scraper is too high and hydraulics are used to lower the blade to increase the depth of cut. When the beam strikes the receiver in the top of the array, then the scraper is too low and hydraulics are used to raise the blade to finished elevation. When the beam strikes the sensor located in the middle then the scraper is at the correct depth. In the end, the plane of the land surface will be perfectly parallel to the rotating plane of the LASER. Fixed position planar (2D) systems cannot easily be used to form anomalies from land surface, such as raised berms for roads, etc.

The second method uses very accurate GPS (3D) signals coming from orbiting satellites. In this case, anomalies to the normal land surface can be dialed in. Also, cuts can be made to the existing land surface at different slopes, instead of one constant slope. As long as the downstream slope is either level with or lower than the upstream slope, water will move in the downstream direction. This can lead to great decreases in cuts. OptiSurface, one of several software packages that work with GPS signals, can predict the amount of standing water in the field after a rain or irrigation-with and without furrows & beds. This feature allows an estimate of crop loss due to water logging (ponding).

Commercial Systems Available and Business Plans

Different commercial guidance packages will be discussed, including product interchangeability. The different equipment requirements based on customer’s business plan.
**WORKSHOP: CENTER PIVOT IRRIGATION**

**Dana Porter, PhD, PE**

Dana Porter is an associate professor and extension agricultural engineering specialist (irrigation and water management) at the Texas A&M AgriLife Research and Extension Center at Lubbock. Dana earned her B.S. and M.S. degrees in Agricultural Engineering at Texas A&M University and her Ph.D. at Mississippi State University. Her applied research program emphasizes evaluation and adaption of agricultural irrigation technologies and best management practices for water-limited crop production systems. Her farm background using gated pipe furrow irrigation (with tailwater reuse) on a commercial farm and her applied research with low pressure center pivot irrigation systems and Subsurface Drip Irrigation systems provide essential practical experience that underpins her Extension programs. Her irrigation Extension educational programs address information and CEU needs of agricultural producers, crop consultants, irrigation and agribusiness professionals, and county-based Extension educators. Examples of her workshop offerings include several irrigation workshops for the Beltwide Cotton Conferences (2000, 2004, 2006, 2010 and 2013), as well as a wide range of targeted local and regional conferences and workshops.

**WORKSHOP: CENTER PIVOT IRRIGATION: TECHNOLOGY AND MANAGEMENT TIPS**

**Workshop Overview**

- **Time:** Thursday, Dec 18, 2014 (1:40 PM - 4:30 PM)
- **CCAs:** 2 ¼ hours (Soil and Water)
- **Instructors:** Dana Porter, PhD (Texas A&M AgriLife, Lubbock, TX)
- **Target Audience:** Farmers using center pivots, Agency personnel working with pivot owners, Pivot dealers

Center pivot irrigation encompasses a wide range of technologies that are excellent tools, promising great results with good management. This session will include an overview of center pivot irrigation, including fundamental considerations (including advantages and limitations; site-specific and operation-specific considerations) that will prove helpful in selecting technology options. It will also address management recommendations to help irrigators to take full advantage of technology. Optimizing benefits of irrigation technologies includes selecting application-appropriate nozzle packages and types, pressure regulators (where needed), general maintenance and management pointers. Best management practices tips will address crop water requirements, soils moisture management, chemigation and safety.
**WORKSHOP: VARIABLE FREQUENCY DRIVES**

**Chris Henry, PhD, PE**

Dr. Chris Henry was a driving force in the formation of the Delta States Irrigation Consortium. In 2013 he organized the *Irrigation Pumping Plant Performance Testing Workshop* in Stuttgart, AR, where he gathered eleven irrigation specialists from seven states. Prior to that he and Dr. Bill Branch of LSU served as chief editors for the *Irrigating Smart* series, a group of thirteen factsheets on important management and safety issues for mid-South irrigators, which called on the expertise of ten irrigation specialists from half a dozen mid-South universities.

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**Workshop Overview**

- **Time:** Thursday, Dec 18, 2014 (1:40 PM - 4:30 PM)
- **CCAs:** 2 ¼ hours (Soil and Water)
- **Instructors:** Chris Henry, PhD (University of Arkansas)
- **Target Audience:** Farmers, Irrigation dealers & well drillers, Electric utility managers & engineers

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Flood/furrow systems watered out of the northern stretches of the Mississippi Alluvial aquifer pull lots of water from shallow depths; these pumps are classified as High Flow/Low Head (HF/LH). Total dynamic head (TDH), which includes pumping water lift, friction loss in column pipe, and outlet pressure is only about 40-50 feet. When water tables drop a mere 5 feet, TDH increases by 10-15% thereby dropping flow rate by at least that much. Modeled and on-farm test results showed that such a 5-foot drop in water table resulted in a 25% drop in flow. Pumps driven by normal electric motors are subject to these losses. However, diesel- and propane-powered pumps skirt this problem when the operator increases engine RPM. Electric motors equipped with variable frequency drives (VFD), can likewise skirt the problems associated with a fluctuating water table. Additionally, VFDs have other advantages, such as possibly being able to use single-phase electricity.
KEYNOTE PRESENTATIONS
Jason Krutz, PhD

Dr. Krutz is an Extension/Research Irrigation Specialist with Mississippi State University based at the Delta Research and Extension Center in Stoveville, MS. Prior to that Jason worked as a research soil scientist for the USDA/ARS in Stoneville. A native of Blytheville, Ark., he holds a doctorate in agronomy from Texas A&M and master’s and undergraduate degrees in agronomy from the University of Arkansas.

Krutz is the Principle Investigator of the joint MSSB and USB grant, *Irrigation Water Management for Southern Region Soybean Growers* that will attempt to increase irrigated soybean yields in the mid-South by 20% by the year 2019.

**What this USB grant is all about.**

The USB/MSSB project will achieve this goal through these objectives:

1) Advance the science and usability of Computerize Hole Selection (CHS) for lay flat poly pipe, soil moisture monitoring, surge irrigation, and other proven irrigation efficiency practices;  2) Develop a more user friendly and easier to implement public domain computer program for evaluating and planning hole punch plans;  3) Validate proven irrigation water management practices mentioned in (1) on soybean grower farms and document sustainable water use and improved profitability;  4) Demonstrate irrigation pumping plant performance gains and how irrigation pumping plant performance can improve energy conservation, profitability and reduced greenhouse gas emissions.  5) Conduct a cost-benefit analysis of the implementation of the irrigation BMP’s in (3).  6) Disseminate results through field days, regular Extension outlets, and through a specialized regional irrigation conference for soybean growers.

Today, the Delta States Irrigation Conference is the first step in meeting the goals outlined in (6). Welcome!
**Freddie Lamm, PhD, PE**

Dr. Freddie Lamm is a professor and research irrigation engineer at the KSU Northwest Research-Extension Center in Colby, Kansas with a 100% research appointment.

Dr. Lamm grew up on a rainfed combination livestock-grain farm in Wooldridge, Missouri. He received a BS in 1978 and a MS in 1979 from the University of Missouri-Columbia in Agricultural Engineering. Lamm received his doctorate in Agricultural Engineering from Kansas State University in 1990. Dr. Lamm has conducted irrigated water management and irrigation systems research for Kansas State University at Colby, Kansas since May 1979 (35 years). His current research is with development and management of advanced irrigation systems [In-Canopy Center Pivot Sprinklers and Subsurface Drip Irrigation (SDI)] for irrigated crop production, particularly for field corn which is the predominate irrigated crop in the region.

**Experiences from the Central Plains Irrigation Conference (1989-2014)**

Since 1989, the Central Plains Irrigation Association has sponsored the annual Central Plains Irrigation Conference each February. The conference rotates between locations in Kansas, Nebraska and Colorado. Its intended audience includes producers, crop consultants, USDA-NRCS, water agency staff and other parties interested in irrigation. This presentation will discuss the history of the conference and its impact.
Lanny Ashlock, PhD

Dr. Lanny Ashlock has been known as “Mr. Soybean” in Arkansas throughout his career as Extension Soybean Specialist with the University of Arkansas Division of Agriculture. For more than 20 years, soybean growers throughout the state looked to Ashlock because of his wealth of experience and complete knowledge of the crop.

His field research led to the implementation of many innovations, including successful use of the early planted soybean systems and adoption of shorter season Group IV and Group V varieties. The ‘80s were a difficult decade for soybean growers and Ashlock is pleased to have been a part of the team that led to growers adapting to the early maturing varieties. Because they could be planted and harvested earlier, these varieties were able to escape much of the harmful effects of the drought farmers were having to contend with at the time. And, due in large part to his efforts, statewide yields improved and today 65 to 70 percent of soybean acres are early maturing varieties. Ashlock says that while he has been instrumental in other areas, that may be his greatest contribution to the industry.

Besides field research and advice, Ashlock contributed to many soybean publications, including the nationally known Soybean Production Handbook and annual Soybean Variety Update. Though now retired as Extension Soybean Specialist, Ashlock spends much of his time actively supporting and helping develop the burgeoning edamame vegetable soybean industry in Arkansas.

Ashlock has received numerous awards and recognition for his service to the industry including Progressive Farmer’s “Man of the Year in Arkansas Agriculture” award, Pioneer Award, Extension Specialist Outstanding Career Award, and American Soybean Industry Merit Award, United Soybean Board Award, and the U.S. Department of Agriculture Service Award, among others.

GOING FORWARD: DELTA STATES IRRIGATION CONFERENCES IN THE FUTURE

On behalf of the Mid-South Soybean Board (MSSB) and the United Soybean Board (USB), we hope you have benefitted from your attendance to the “Delta States Irrigation Conference and Trade Show – 2014”. This activity has been made possible by the soybean producer check-off funds of the states of AR, LA, MO, MS and TX and by an intensive commitment of the USB. The USB and the MSSB have joined hands to fund a four-year research and technology transfer project entitled “Irrigation Water Management for Southern Region Soybean Growers” that was submitted by Dr. Jason Krutz, Extension Irrigation Specialist with the Mississippi Agriculture and Forestry Extension Service, and by Dr. Chris Henry, Water Management Engineer with University of Arkansas Division of Agriculture. This project encompasses much more than the conference we have just participated in. It will expand into multiple in-depth on-farm water management demonstrations in all of the Mid-South states that comprise the MSSB. These comprehensive on-farm demonstrations will focus on insuring that these cooperating soybean producers are exposed to the most effective and efficient water management programs for their individual farming operations. Additionally, the research and Extension personnel involved in this project will continue to evaluate ways to insure that water management programs are adapted to Mid-South soybean production systems and environments and that they are producer-friendly and scientifically sound. Current and new findings will be shared with all interested soybean producers in
future conferences that are scheduled for Arkansas, Mississippi and Louisiana over the next three years as well as appropriate publications, podcasts and programs.

In closing, on behalf of the MSSB, the USB and all the speakers and attendees, it is my privilege to recognize and express our sincere and deepest appreciation to Dr. Joe Henggeler, Irrigation Specialist for Commercial Agriculture with the University of Missouri Delta Center. Joe has worked tirelessly to make this conference a reality. “Events like this don’t just happen, they are caused,” and certainly the first of the four planned “Delta States Irrigation Conference and Trade Show – 2014” is one such event. Again we are all indebted to all of our conference speakers and participants and we sincerely thank our trade show partners for helping to make this conference and trade show a reality. But most of all we thank the soybean producers of not only the Mid-South but of the U.S. for your continued commitment to the nationwide soybean check-off program. Your support of educational activities such as this conference helps insure that U.S. soybean producers remain not only competitive but wise stewards of our nation’s natural resources, and it also helps ensure that the U.S. soybean industry remains viable and economically and environmentally sustainable for future generations.
SPEAKER CONTACT INFORMATION