lizing wheat as a cover crop.

Given the higher price for nitrogen fertilizer, will the use of a nitrogen fixing cover crop reduce the need for commercial fertilizer? Based on results of the treatments in this experiment, the answer is no. Treatments utilizing hairy vetch as a cover crop did not require additional commercial nitrogen fertilizer. However, the cost of hairy vetch seed more than offset the cost of commercial nitrogen. Therefore, replacing commercial nitrogen with a hairy vetch cover crop is not economical considering only the cost of the hairy vetch cover crop and the cost of commercial nitrogen. There may be other benefits derived from the use of hairy vetch as a cover crop, but those are not included in this analysis.

No tillage production systems for cotton offer advantages in terms of efficiency and cost advantages. The no-till systems have lower labor and equipment requirements than production systems utilizing tillage operations. The recent increase in fuel and fertilizer prices has magnified the cost advantage of the no-till production systems for cotton. Consequently, the no-till systems produce cotton for the least cost per pound of lint for the systems included in this analysis.

Improving Furrow Irrigation With Help Of "Phaucet" Computer Program

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Presented by Steve Stevens
Arkansas Farmer

The Phaucet computer program, developed by the NRCS in Missouri, helps improve furrow irrigation. The program offers the potential for reducing irrigation and field runoff by providing the following;

1. Design of holes sizes to punch in irrigation tubing
2. Calculation of pressure (head) changes along the tubing
3. Adjustment of hole sizes for different row lengths in the same irrigation set
4. Ability to evaluate different layout options for the field and irrigation tubing
5. More uniform watering of the field in shorter time period

Following is the field information needed to run the program;

1. Field size and dimensions
2. Accurate measurement of flow rate from well
3. Maximum number of hours that can pump in one set without causing problems
4. Row lengths in the field, not each row length but long and short rows in a set
5. Length and slope of turn row for irrigation tubing
6. Row spacing and preference on irrigating every furrow or every other furrow

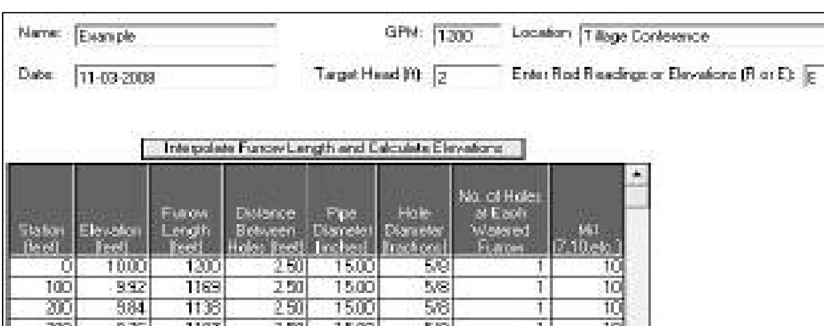

Figure 1. Example of the program input data screen.

The “Station” column is the irrigation tubing turn row length in 100 feet increments (Stations) and the “Elevation” column describes the turn row slope. It is not necessary to input elevations or “Furrow Length” at each Station because the program interpolates the numbers between the values that are input. The “Distance Between Holes” column is determined by the row spacing and whether you irrigate every furrow or every other furrow. The “Pipe Diameter” column is the size of the irrigation tubing used and the “Hole Diameter” column is a first estimate for the hole size for the furrows that are irrigated. The “No of Holes at Each Watered Furrow” column lets you punch more than 1 hole in a furrow if desired and the “Mil” column is the thickness of the irrigation tubing. If a set of furrows are not to be irrigated then the 4 columns; “Furrow Length”, “Distance Between Holes”, “Hole Diameter” and “No. of Holes at Each Watered Furrow” should be blank for those furrows but the other 4 columns should have entries. Once the input table is completed and a design option is selected, the program produces an output data screen like shown in Figure 2. The design data can be printed out in a format that can be taken to the field and used for punching the holes in the irrigation tubing.

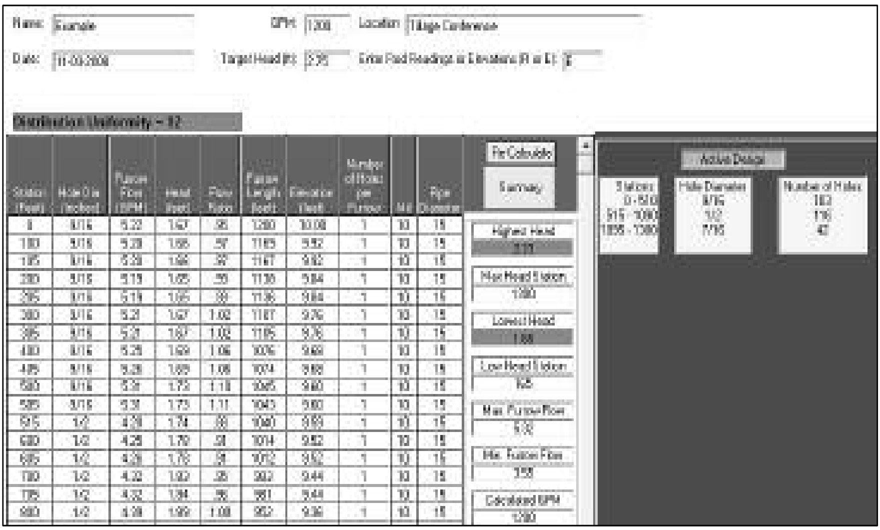

Figure 2. Example of the program output data screen

The “Distribution Uniformity” value is an indication of how uniform the furrow water will be as it reaches the end of the field. The goal is for this value to be 90 or better so that the water in the furrows will reach the end at approximately the same time even though some furrows are longer than others. If this is accomplished, field runoff is reduced and the time required to irrigate the field can be shorter, which saves water and reduces pumping cost.

The Phaucet program is being used by staff of the University Of Arkansas Division Of Agriculture, Cooperative Extension Service to assist Arkansas producers with furrow irrigation of their fields. Steve Stevens is a producer in the Tillar area of South East Arkansas who used the Phaucet program extensively during the 2008 season. After Steve received some training on using the program, he started gathering the field information needed for running it on some of his furrow irrigated corn fields. He used a flow meter to check the flow of his wells which helped determine which wells had problems and the best speed or RPM setting for each well. Steve used field maps from his Farm Works software to determine field dimensions and row lengths and on fields that the turn row slope wasn’t known he used his Laser unit to determine the elevation change along the turn row.

Steve ran into some resistance from his irrigation crew initially so he worked with them on the field setup of the first field to address their doubt and to help him determine if this was really worth the effort he was making. When the rows in the field watered out more uniformly and quicker than they ever had before Steve was pretty much convinced. However, his crew was still skeptical about it working on many of the other fields. Well they got the chance to see if it did work because Steve proceeded to run the program on 155 different fields this past season that ranged in size from 11 acres to 108 acres. The total for all the fields was about 4400 acres and included furrow irrigated cotton, corn and soybeans on soils ranging from sandy to clay. The fields varied from fairly square or rectangle shapes to triangle shapes with furrow lengths ranging from 100 feet to 1600 feet.

The irrigation crew started realizing that knowing the lay out for the field before they got there helped them get the fields going quicker because of the reduced guess work. They also realized that since the fields watered more uniformly and quicker they didn't have to spend as much time checking the fields while they were being irrigated. Steve has the field data stored on an external hard drive and print outs for each field so that he and his crew, as well as any future employees, can easily recall how to set up the fields in seasons to come.

Steve and his crew invested a lot of effort into using the program this year. In addition to the time involved with gathering the field data, Steve averaged about 30 minutes of computer time for each field and this ranged from 10 minutes to up to 1.5 hours for a couple of complicated field setups. Steve knows it was well worth the effort because the 25% less pumping time that he averaged on the fields reduced his $4 per gallon diesel fuel cost by approximately $100,000. The reduced pumping also conserved about 670 million gallons (2055 acre-feet) of the areas ground water that is a very precious and limited resource. This is the equivalent of 5.6 inches of water covering all of Steve's 4400 acres and the savings would have been even greater if the August rainfall hadn't been well above average this past season.

Conservation Systems Cotton & Rice Conference

RICE PRESENTATIONS

Herbicide Performance In Stale Seedbed Rice Production

Presented by Dr. Jason A. Bond
Weed Scientist, Mississippi State University, Delta Research and Extension Center

Presented by John-Kirk Manning
Mississippi State University, Delta Research and Extension Center

Presented by L. Chris Vaughn
Mississippi State University, Delta Research and Extension Center

Most rice in the midsouthern United States is grown using conventional tillage; however, conservation tillage has gained acceptance in many rice-growing areas. Conservation tillage includes both no-tillage and stale seedbed systems. Rice is planted into the residue of a previous crop in a no-till system, whereas in the stale seedbed system, previous crop residue is destroyed by tillage in the fall, and seedbeds remain fallow during the winter. The adoption of conservation tillage in rice has been encouraged because of its economical and environmental benefits. Preplant weed management, dif-