

Progress Report  
On  
DRIP IRRIGATION AS A METHOD OF REDUCING THE MOVEMENT  
OF SALTS, SEDIMENTS, NITRATES AND SELENIUM  
INTO THE ARKANSAS RIVER AND ITS GROUNDWATER BASIN  
IN THE PATTERSON HOLLOW WATERSHED  
June 20, 2005

DRIP IRRIGATION SURVEY

A drip irrigation survey was mailed out to 173 farm operators in the Patterson Hollow area on February 16 with self-addressed, stamped envelopes. (A copy of the survey is attached.) Forty-six (46) surveys were answered: four (4) are presently using drip irrigation, seventeen (17) are interested in learning more about drip irrigation and feel it would benefit their operations, two (2) may be interested and twenty seven (27) indicating they had no interest in drip irrigation or it didn't fit their farm operation. A more comprehensive analysis of the survey will be done for the annual report.

MATT PROCTOR FIELD DEMONSTRATION

Seeded Onions

A one-bed planter with six rows spaced 3 inches apart on a 60-inch bed was equipped with Gandy boxes to apply Agri-Blend (HYDROGEL with 30% Zeolite) in the seed furrow in front of the disk openers (Figures 1 and 2). The Agri-Blend, a dry granular blend, was applied at the rate of 10 pounds per acre. This blend is designed to move moisture through the Zeolite to the HYDROGEL that absorbs the moisture, then releases the moisture and keeps the area around the germinating and sprouting seed moist. Many soils tend to dry and the soil splits down the seed furrow allowing the soil, seed and sprouts to stress for moisture or dry out.

Three varieties of onions were seeded with Cometta on 5.7 acres in Zone 6, Vaquero on 5.7 acres in Zone 7 and Blanco Duro on 11.4 acres in Zones 11 and 12. Zone 6 was planted March 1, Zone 7 was planted March 2 and Zones 11 and 12 were planted on March 3. The onions were seeded with seeds spaced approximately 3 inches apart. Check rows without Agri-Blend were planted every 12 rows throughout each drip zone.

Drip lines for the system are approximately 8 inches below the surface in the middle of the beds and are spaced 60 inches apart. Rain showers and snow after planting helped with germination and effective stands were established (Figures 3 and 4).

Soil tests have been taken on all areas and will be tested for salinity and selenium as well as other

elements and nutrients. Water samples will be taken for salinity and selenium content.

### Transplanted Onions

Agri-Blend was also used on transplant onions and applied as the furrow for the onion sprouts was opened (Figure 5). The two center rows received Agri-Blend at the rate of 10 pounds per acre while the outside rows on each side will be used as the untreated check rows. On April 13, 14 and 15, sprouts of the Vaquero variety were hand planted approximately 4 inches apart with two rows 8 inches apart on 30-inch beds (Figures 6, 7 and 8). The crop was furrow irrigated with siphon tubes once the planting was completed. Soil tests and water samples are being taken to determine salinity, selenium and other elements and nutrients.

## HANAGAN FARMS FIELD DEMONSTRATION

### Transplanted Onions

On April 16 and 17, Vaquero sprouts were hand planted, three rows per bed spaced 8- inches apart (Figure 9). The sprouts were planted on 4-inch spacing.

The drip lines are approximately 15 inches below the center of the bed and are spaced 60 inches apart. A surface mainline is used to supply the buried drip lines (Figure 10). The drip system was turned on when the field was planted. Rain showers during the early growth stages helped with soil moisture.

Agri-Blend was injected behind the sprout furrow opener at the rate of 15 pounds per acre on two beds, while the 3<sup>rd</sup> bed was an untreated check. When coming back up the field, the 1<sup>st</sup> bed was an untreated check and the 2<sup>nd</sup> and 3<sup>rd</sup> beds were treated with Agri-Blend, leaving a pattern of two beds treated and two beds untreated.

Soil samples have been taken and will be analyzed for salinity and selenium as well as other elements and nutrients. Water samples will be taken from the groundwater well supplying the drip system and have a complete analysis plus selenium.

## ARKANSAS VALLEY RESEARCH CENTER

### Drip vs. Furrow Irrigation on Seeded Onions

Agri-Blend was applied to the seed furrow at the rate of 20 pounds per acre one day prior to planting on March 8. Ranchero variety of onion was planted with seeds approximately 3 inches apart with two rows per 30-inch bed spaced 10 inches apart (Figure 11). The onions were

irrigated for germination the following day. The onions have been irrigated six (6) times since planting.

The drip lines are buried 3 to 4 inches below the surface in the center of the bed and spaced 30 inches apart. These are temporary drip lines and will be used one to three years depending on cropping patterns. The treatment and check are replicated four times across the field.

For weed control, Prowl and Roundup were applied at pre-emergence, Outlook and Goal were applied at the 2-leaf stage and Dual and Goal were applied at the 6-leaf stage of growth.

### Agri-Blend vs. Untreated on Furrow Irrigation

Ranchero variety onions were seeded on an area adjacent to the Drip vs. Furrow Study. Planting date, rate and other cultural practices were the same on each area (Figure 12). The plots were replicated four (4) times down the field.

The onions were furrow irrigated the following day. The onions have been irrigated six (6) times since planting.

### Field Tour

A field tour is being planned for the latter part of July to look at the farm demonstrations and plots at the Arkansas Valley Research Center.

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FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4



FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 8



FIGURE 9



FIGURE 10



FIGURE 11

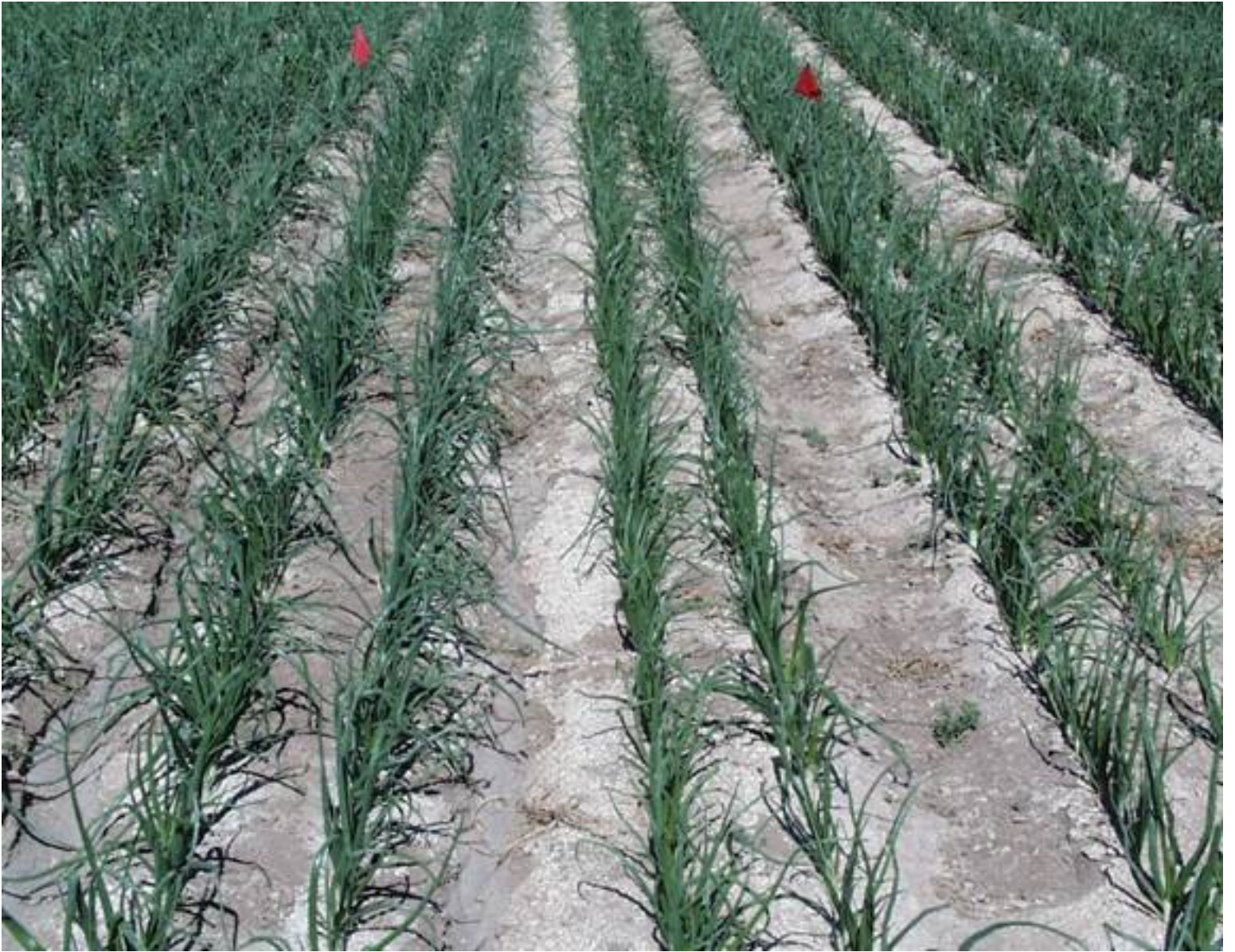


FIGURE 12