Drip Irrigation in Central Arizona

Colorado River Water Users Association
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Crops Planted in 2018

- 2200 acres Alfalfa
- 700 acres Durum Wheat
- 400 acres Late Cotton
- 1000 acres Full Season Cotton
- 1000 Acres Silage Corn
Tempe Farming Irrigation Systems

- 2500 acres Level Basin
  - large head sizes, 10 to 12 CFS
  - small, benched fields
- 1400 acres with natural row fall
  - row fall between .1 and .4 feet/100
  - smaller head sizes, 6 to 8 CFs
- 1100 acres Subsurface Drip
  - 5 separate installations
  - head sizes from 2 to 6 CFS
Reasons Tempe Farming Installed Drip

• New farms with old or dirt ditches, long runs, steep fall up to .7 feet/100
• Needed to start over, large Concrete Ditches and Leveling cost $1000 to $1500/acre
• Drip System cost $2500/acre
• Rotating with melon grower paying high rents
• State of Arizona Tax Credit
  --75% Credit of the cost to install water conserving irrigation system
Tempe Farming Basic System

- Reservoir to take district water deliveries
- Booster pumps drawing from the reservoir
- Sand media filters
- Injection pumps for fertilizer and other chemicals
- Buried mainlines and submains to fields
- 36” row spacing
- 13 mil tape, buried 9” deep
- .25 gph emitters
- Manifolds on both field ends for ease of flushing
- Delivers about 2.4” per 24 hour period
Positives of Drip Irrigation

- Minimum tillage
- Fertilizer Savings
- Higher Crop Yields
- Water Savings
Minimum Tillage

• Conventional tillage
  --Disc, rip, plow, disc 2 times, laser level, make furrows, preirrigate mulch, plant $180/acre

  VS.

• Minimum tillage
  --Pull roots, disc 2 times (includes furrowing), plant $65/acre
Fertilizer Savings

- Fertilizer stays in root zone
- Uniform throughout the field
- Wheat  Drip 60 units of Nitrogen vs. Flood 80 units of Nitrogen
Higher Crops Yields

- Wheat + $\frac{1}{2}$ ton/acre
- Alfalfa + 2 tons/acre
- Cotton + $\frac{1}{2}$ to 1 bale/acre
Water Savings

• Wheat  ½ acre foot less
• Alfalfa  Flood irrigation  .65 acre feet/ton
  Drip irrigation  .55 acre feet/ton
• Cotton  1 acre foot less
Disadvantages of Drip

- Gophers!!!!
  Chew through the buried tape
- Difficult to establish alfalfa at planting
- Irrigation scheduling different
- More intensive management and skilled labor
- All crops don’t match the permanent installation
- $$ Cost to install and years to recover costs
Challenges in our irrigation district

• Maricopa Stanfield Irrigation and Drainage District
  --Ag Districts low priority of CAP water users
  --Probable water shortages from lower Lake Mead levels
• Potential of urban development
• Spend big bucks for a drip system with potential water cutbacks?
  But,
A potential advantage to drip is matching pump output (smaller head size needed)
Committed to Drip Irrigation

- Drip not for everyone
- It’s great for us
- We wish we had more!