

SDI CONVERSION-- IMPORTANT CONSIDERATIONS

Bill Carroll
Toro Micro-Irrigation

I.) INTRODUCTION

A.) Brief review of system components (*photo system layout*)

B.) Emitter Types

- 1.) Tape
- 2.) Thin-walled Dripper Line
- 3.) Inline Dripline
- 4.) Permanent SDI Wall -Thickness 13-15 Mil
- 6.) Emitter Spacing – Dependent on Crop / Soil

B.) Benefits of SDI

- 1.) Complete Field Coverage
- 2.) Elimination of Run-off, Evaporation, Deep-percolation, Wind-Drift
- 3.) Spoon-feed Nutrients – Improved Timing
- 4.) Utilize Low Capacity Wells
- 5.) Maximize Yield Throughout Field

C.) Liabilities

- 1.) Rodent / Insect Damage
- 2.) Initial Cost
- 3.) New Irrigation Scheduling Techniques, Maintenance Procedures
- 4.) Germination
- 5.) Clogging
 - a.) Chemical - Precipitates
 - b.) Biological – Algae, Bacteria
 - c.) Physical – Sand, Silt, Clay

II.) DESIGN INPUTS

A.) Field Plat

- 1.) **DIMENSIONS**
- 2.) **SLOPE (FLAT IS 0%)**
- 2.) Well Location
- 3.) Location of Above and Below Ground Infrastructures

B.) **SOIL TYPE**

C.) **WATER SAMPLE – WATER TEST**

D.) WELL TEST – PRESSURE FLOW CURVE

E.) Available Well Operating Time

- 1.) Off-Peak Rates / Power Interruption
- 2.) Other Demands On Well

F.) Meet EQIP Design Requirements

III.) SYSTEM CAPABILITIES

A.) Measures of Performance

- 1.) EU
- 2.) Min/Max %
- 3.) Flushing Velocity
- 4.) Application Rate (In/Day)

B.) **FILTRATION** (*photo of filters*)

- 1.) Location
- 2.) Screen
- 3.) Disc
- 4.) Sand Media
- 5.) Centrifugal Separator
- 6.) Disposal of Flush Water

C.) Flushing

- 1.) **FLUSH MANIFOLD**
- 2.) **VELOCITY**
 - a.) Minimum 1.5 ft/sec
 - b.) Quantity of Flush Water (up to 100% + over irrigation)
 - c.) Location of Flush Valves (*photo of flush valve*)
- 3.) **FREQUENCY**
 - a.) Start-up / Shut-down
 - b.) Pressure/Flow Changes
 - c.) Depends on Water Quality

D.) Irrigation Zones (*photo of PR valve*)

- 1.) **PRESSURE-REGULATING VALVES**
- 2.) Valve Location
 - a.) Accessibility
 - b.) Marking/Recognition
 - c.) Planting, Cultivation, Harvesting Operations
- 3.) Air Vents / Vacuum Release (*photo of air vent*)

E.) System Control

- 1.) Manual
- 2.) Automatic
- 3.) Simple to Complex

- 4.) Start Small and Simple
- 5.) Provide for System Expansion and Upgrade
- 6.) **FLOWMETER / TOTALIZER**
- 7.) **PRESSURE GAUGES**

D.) Chemigation/Fertigation

- 1.) **pH CONTROL**
- 2.) Fertilizer
 - a.) Nitrogen (moves with wetted front through soil)
 - b.) Don't mix chemicals (similar to sprayer restrictions)
 - c.) **WATER SOLUBLE – pH <7.0**
 - d.) **CLEAR JAR TEST**

IV. INSTALLATION

A.) Good Equipment (*photo of tool bar*)

- a.) Tool Bar
- b.) Shanks
- c.) Reels
- d.) **INSPECT SHANKS FOR BURRS, DEBRIS, ETC.**
- e.) **DON'T DAMAGE TAPE DURING INSTALLATION**

B.) Plowing In Tape (*photo of installation*)

- a.) **SET DEPTH**
- b.) **MONITOR CONTINUALLY**
- c.) Cover Shank Cuts – Limits Rodent Damage

C.) Connections (*photo of manifold, riser, tape connection*)

- a.) Trenching (Trencher – Not Backhoe)
- b.) **DRILL PVC – SPECIAL DRILL**
- c.) Grommets
- d.) **BACKFILL CAREFULLY**
- e.) **START UP AND RUN ASAP**

V. OPERATION & MAINTENANCE

- A.) Manufacturer's Manuals
- B.) As-Built Design
- C.) Good Record Keeping

VI. CONCLUSION & QUESTIONS

- A.) Do Your Homework
- B.) Provide Dealer Good Information
- C.) **ASK QUESTIONS**
- D.) **CUT CORNERS WITH CAUTION**
- E.) **MAKE "APPLES TO APPLES" PRICE COMPARISON**

**Topics in Bold – Vital to System Performance*