Subsurface Irrigation Solutions: Forced vs. Responsive

December 5, 2019
11:40 a.m.-12:40 p.m.
Presented by: Responsive Drip Irrigation and their Guests
Comparison: Drip Irrigation vs. Plant Responsive Irrigation

- Drip irrigation systems (SDI & SSDI) deliver a set volume of water during cycled intervals regulated by a timer, electronic controller, or manual valves.

- Plant responsive irrigation systems release water & nutrients in response to plant root signals.
Current Technology

- Sophistication
- System cost
- Design and installation
- Efficiency
- System issues
Sophistication
Costs

- System installation
- Water
- Fertilizer(s)
- Amendment(s)
- Energy
- Maintenance
Drip Irrigation System Issues

- Improper Design & Installation
- System Clogging
- Soil Percolation/Salt Leaching
- Repairs
- Mechanical Failure
- Variable Efficiency
Salt Leaching

- Movement of Minerals
- Reduction of Plant Growth
- The Cycle
- Water Table
- Major Concern of Growers in US
- Low Flow
- Low Percolation
• A plant responsive irrigation system uses “organic chemistry” to release water/nutrients when triggered by plant root signals, which reduces plant stress, thereby producing optimal plant performance in lawn & landscape or agricultural applications.
• Loosely held water molecules
• Breaking the surface tension bond
• Traveling water molecules
• Absorption
# System Comparisons

<table>
<thead>
<tr>
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<th>Responsive</th>
<th>Surface Drip</th>
<th>Sub Surface Drip</th>
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</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
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<tr>
<td><strong>Design &amp; Installation</strong></td>
<td>Easy</td>
<td>Moderate</td>
<td>Moderate</td>
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<tr>
<td><strong>Maintenance</strong></td>
<td>Low</td>
<td>Moderate</td>
<td>Moderate</td>
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<tr>
<td><strong>Maintenance Cost</strong></td>
<td>Low</td>
<td>Moderate</td>
<td>Moderate</td>
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<tr>
<td><strong>Operation</strong></td>
<td>Easy</td>
<td>Moderate</td>
<td>Moderate</td>
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<tr>
<td><strong>Run Off</strong></td>
<td>None</td>
<td>High/Moderate</td>
<td>None</td>
</tr>
<tr>
<td><strong>Evaporation</strong></td>
<td>Minimum/None</td>
<td>Moderate</td>
<td>Minimum/Moderate</td>
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<tr>
<td><strong>Percolation</strong></td>
<td>Low</td>
<td>High</td>
<td>Moderate</td>
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<tr>
<td><strong>Disease Level</strong></td>
<td>Low</td>
<td>Moderate</td>
<td>Low/Moderate</td>
</tr>
<tr>
<td><strong>Fertilizer Use</strong></td>
<td>Minimal</td>
<td>High</td>
<td>Moderate/High</td>
</tr>
<tr>
<td><strong>Clogging</strong></td>
<td>None</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td><strong>Salt Leaching</strong></td>
<td>Very Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td><strong>Overall Performance</strong></td>
<td>Very High</td>
<td>Moderate</td>
<td>Moderate/High</td>
</tr>
<tr>
<td><strong>Water Conservation</strong></td>
<td>Very High</td>
<td>Moderate/High</td>
<td>High</td>
</tr>
</tbody>
</table>
Benefits of Responsive Irrigation systems versus Drip Irrigation

• Superior water efficiency
• Less fertilizer & amendments
• Simple design & installation
• Fewer components
• Same or lower system costs
• Minimal maintenance
• Eliminates root intrusion
• Reduces weed growth
• Performs well with various water & soil types
• Eliminates run-off and fertilizer leaching into water source
• Low pressure
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