Surface Renewal: A New Tool to Help Growers Manage Water to Meet Their Production Goals
Brief Technology Background

How Growers Use the Technology
What is the water status of my field?
What is the water status of my field?

What do I do about it?
Tule’s Three Building Blocks

1. Water Stress
2. Actual Evapotranspiration
3. Irrigation Application Amounts
What is the water status of my field?

1. Water Stress Level

   What do I do about it?

2. Actual Evapotranspiration

3. Irrigation Application Amounts
Soil Plant Atmosphere Continuum
1. Plant Response Index: Water Stress Level

**Lysimeter**

![Graph showing Actual ET / Reference ET vs Midday Leaf Water Potential (bars)]

**Surface Renewal**

![Graph showing Actual ET / Reference ET vs Midday Leaf Water Potential (bars)]
2014 Season Summary

Average Weekly PRI

Actual ET (GWP/Week)

Date

Early Deficit All
Early Deficit Low

May Jun Jul Aug Sep Oct

Average Weekly PRI

Actual ET (GWP/Week)

Date

Early Deficit All
Early Deficit High

May Jun Jul Aug Sep Oct
2. Actual Evapotranspiration

- Irrigate to replace what was lost to ET
- Not CIMIS
- 1 - 10 acres
- Wind eddies transport water vapor
3. Irrigation Application Amounts
Surface Renewal

- UC Davis, USDA-ARS
- Paw U, Snyder, McElrone, and Shapland
Brief Technology Background

How Growers Use the Technology
Plant Response Index (Actual ET / Reference ET)
Quantity of Water (gallons per vine) to Apply As Percentage Last Week's Actual ET

*The highlighted column below is Tule's irrigation recommendation

<table>
<thead>
<tr>
<th>Percentage of Actual ET (gallons per vine)</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
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</thead>
<tbody>
<tr>
<td>0%</td>
<td>2.14</td>
<td>4.28</td>
<td></td>
</tr>
<tr>
<td>0.00</td>
<td>10%</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>
2014 Season Summary

Average Weekly PRI

![Graph showing PRI values over months with different symbols for No Deficit, Late Deficit, and Early Deficit phases.](image-url)
1. Average Weekly Irrigation: 4 GPV

2. Early Deficit: < 6” TAW.  
   3 GPV (or 10 in Aug. & Sept.)

   Late Deficit: 6 - 12” TAW  
   4 GPV

   No Deficit: > 12” TAW  
   6 GPV

3. Examples and Grower Experiences