CASE STUDY 2 LONG ORCHARD
Improving Irrigation Efficiency

Hot summers and cork spot in D’Anjou can be a significant challenge in Central Washington. Cork spot is responsible for an estimated $7 to $8 million dollars in losses to Anjou production every year. In 2017, cork spot accounted for approximately 33% of Anjou culls. Irrigation frequency and timing, as well as good calcium programs can affect tree growth, productivity and fruit quality in pears. Improved irrigation systems can target water to the crops increasing water use efficiency.

SITE CHALLENGES
- Severe cork.
- Did not pick block in 2017 due to 80% cork.

STANDARD SYSTEM
Impact sprinklers (Rainbird and R2000) on 24 foot by 20 foot spacing. Grower generally runs irrigation weekly during the growing season using 12 to 24 hr sets.

<table>
<thead>
<tr>
<th>sprinklers</th>
<th>GPM*</th>
<th>GPH*</th>
<th>Efficiency</th>
<th>Acre-inch**</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>1.08</td>
<td>5881</td>
<td>0.8</td>
<td>0.17</td>
</tr>
</tbody>
</table>

*Per sprinkler head. **Takes into account irrigation efficiency.

UPGRADE
Sentec soil moisture sensors were installed in April 2019. Irrigation in 2019 in the ‘upgrade’ block was done according to soil moisture needs rather than a standard schedule.

IMPACT ON WATER USE

<table>
<thead>
<tr>
<th>Year</th>
<th>Standard hrs</th>
<th>Standard gal</th>
<th>New hrs</th>
<th>New gal</th>
<th>Savings gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>120</td>
<td>705672</td>
<td>108</td>
<td>635105</td>
<td>70567</td>
</tr>
</tbody>
</table>
Figure 5. Soil moisture stayed above the full point (field capacity) for most of the season in the standard irrigated block compared to between refill and full in the block where Long irrigated according to soil moisture sensor readings.

IMPACT ON FRUIT QUALITY

Figure 6. Fruit quality information from commercial packout from 2019 fruit packed 12/31/2019.

Thank you to Brandon Long, Bob Gix, Cascadia Conservation District, Wilbur Ellis, Bonneville Environmental Foundation.
By Tianna DuPont, WSU Extension

---

1 This value was estimated using cull analysis and pack out data from packinghouses representing 33% of the pear industry
4 Raese et al. (1982).