

## CASE STUDY 2 LONG ORCHARD

### Improving Irrigation Efficiency

Hot summers and cork spot in D'Anjous can be a significant challenge in Central Washington. Cork spot is responsible for an estimated \$7 to \$8 million dollars<sup>i</sup> 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<sup>ii</sup>. 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.



Figure 1 Project site Long Orchard Flowery Divide Rd Cashmere WA.

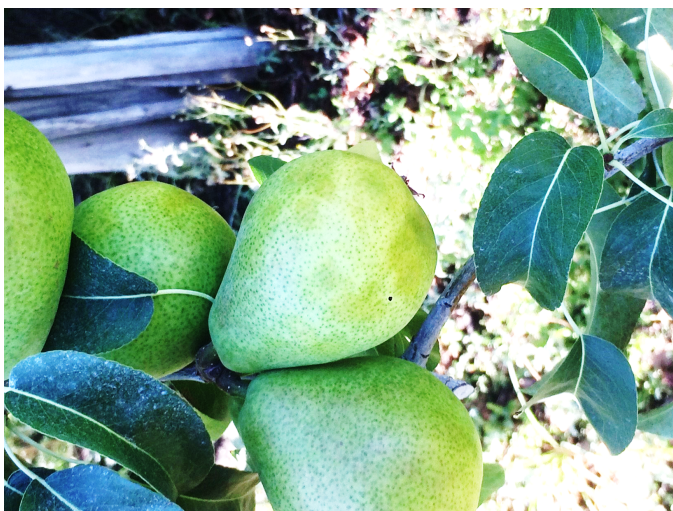


Figure 2 Cork is a challenge at this site.

**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.

| Long: System Description per Acre |      |      |            |             |
|-----------------------------------|------|------|------------|-------------|
| sprinklers                        | GPM* | GPH* | Efficiency | Acre-inch** |
| 91                                | 1.08 | 5881 | 0.8        | 0.17        |

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



Figure 3. Rainbird sprinklers (left) and R2000 sprinklers (right).

**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.



Figure 4 Sentec irrigation sensor installed April 2019.

#### IMPACT ON WATER USE

| Year | Per Acre Water Use |        |     |        | Savings gal |
|------|--------------------|--------|-----|--------|-------------|
|      | Standard           |        | New |        |             |
|      | hrs                | gal    | hrs | gal    |             |
| 2019 | 120                | 705672 | 108 | 635105 | 70567       |

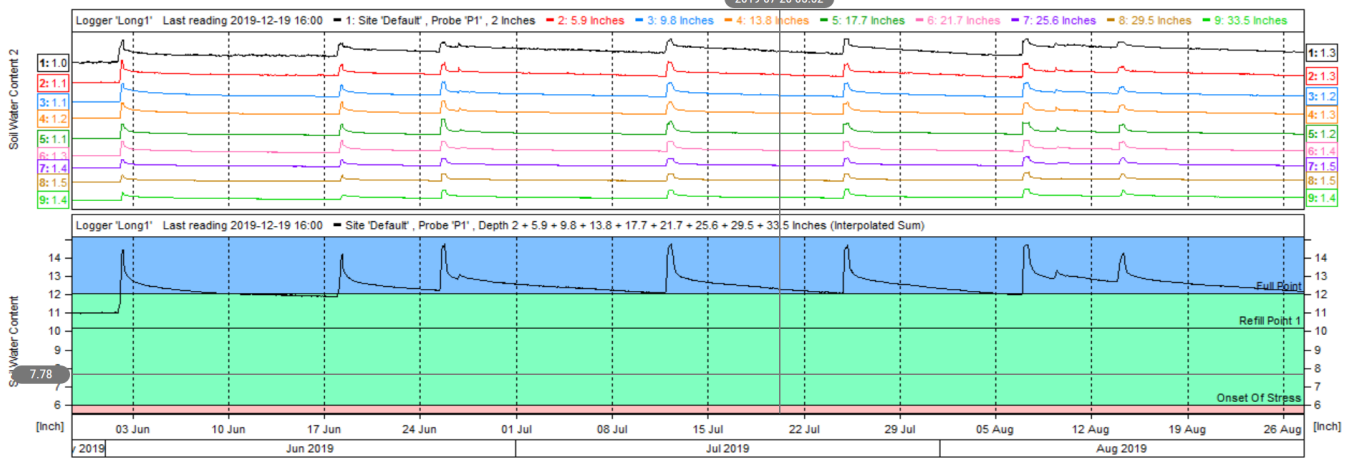
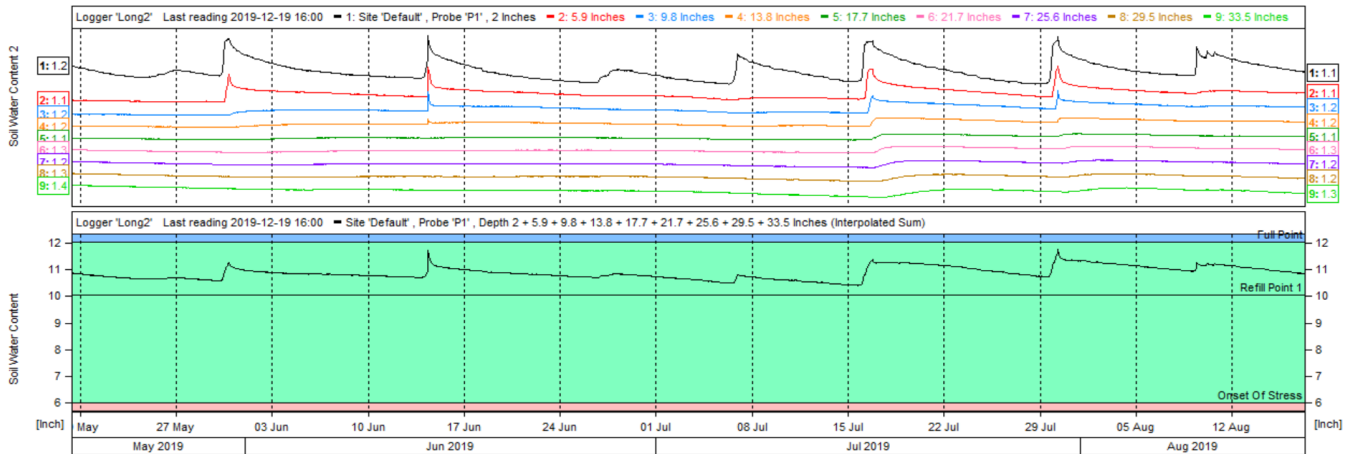


Figure 5. Soil moisture stayed above the full point (field capacity) for most of the season in the standard irrigated block compared to between refill and full in the block where Long irrigated according to soil moisture sensor readings.

**IMPACT ON FRUIT QUALITY**

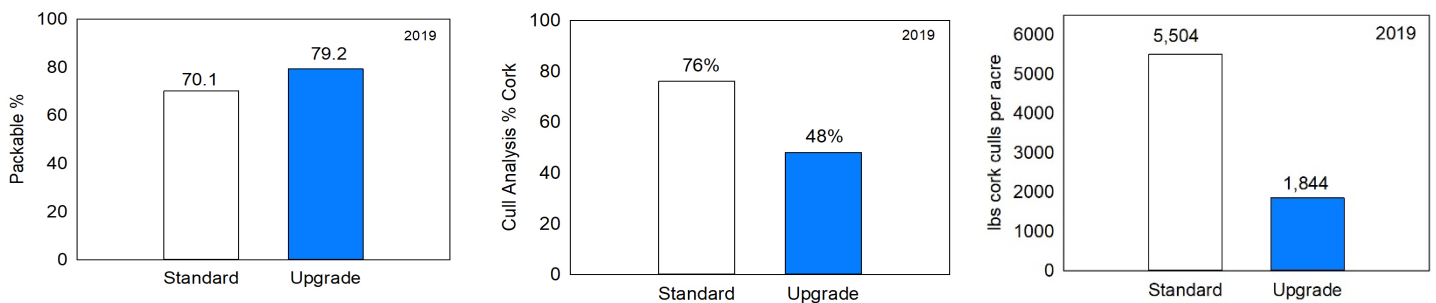


Figure 6. Fruit quality information from commercial packout from 2019 fruit packed 12/31/2019.

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By Tianna DuPont, WSU Extension

<sup>i</sup> This value was estimated using cull analysis and pack out data from packinghouses representing 33% of the pear industry  
<sup>ii</sup> Raese et al. (1982).