**Abstract – Hort 510**

**Resource Conservation in Cider Apple Production**

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Western Washington has high costs of production and water resources are increasingly limited for cider apple production. This project evaluated orcharding methods that conserve irrigation water and pruning labor to assist cider apple growers to be more cost competitive in this region. Fruit quality was also assessed in both studies to determine if desirable characteristics for cider were preserved or enhanced, as this is important for cidermakers. The first study evaluated reduced irrigation (RI) for cider apple production in 2019 and 2020 in northwestern Washington on three cider apple cultivars: Dabinett, Porter’s Perfection, and Golden Russet, in their third and fourth leaf. Moderate water stress as indicated by stem water potential did not occur either year, thus irrigation was never applied to the RI treatment plots. Trees in the RI treatment did not differ from the control treatment in vegetative growth, fruit yield, juice yield, or any juice quality attribute, but weight per fruit decreased by 7 g, and fruit firmness (measured only in 2020) increased by 2 Newtons. Results indicate that fruit yield and quality in an establishing orchard can be maintained when irrigation is reduced relative to an estimated crop water balance or conventional grower practices for this region. The second study evaluated mechanical hedging in 2019 and 2020 on eight cider apple cultivars: Golden Russet, Harrison, Brown Snout, Cap of Liberty, Tom Putt, Campfield, Puget Spice, and Hewe’s Virginia Crab. The estimated time to hedge 1 acre was 1.45 h based on our tractor speed and orchard density. Fruit damaged by the hedger was observed to be negligible for all cultivars. Summer hedging did not negatively impact fruit yield, and as it has previously been shown to conserve time and labor it appears suitable for summer pruning of a diversity of cider apple cultivars.