

Orchard Life Cycle Assessment Data Needs

Ideally data collected will be on an annual per-acre basis, but as long as we have the information needed to convert responses to this basis, whatever format is easiest for the responder can be used (whole orchard, monthly, etc.)

Farm Information

- Location
- Irrigation
 - Source(s)
 - Surface Delivery %
 - Groundwater %
 - Pumping
 - Solar, Grid Electric, Diesel
 - System Type
 - Microsprinkler, drip, flood, furrow, sprinkler, etc
- Tree parameters
 - Age
 - Yield
 - Planting Density/ Spacing
 - Biomass per tree/ per acre (as many of these data sources as possible)
 - Destructive Sampling (at 3 different ages)
 - Clearing biomass measurement
 - Previous analyses

Chemical and Material Input

- Annual Fertilizer/ Nutrient application
 - Nutrient, trade name and quantity per acre
 - Equipment used
 - Time requirement (hours per acre)
- Annual Pesticide Application
 - Specific to pest and treatment type where possible
 - Equipment used
 - Time requirement (hours per acre)
- Any other material or chemical inputs
 - Mating disruption/ other pest control
 - Stakes
 - Tree paint/ wrap
 - etc
- Irrigation quantity (acre-inches per acre)
 - By system if more than one

Fuel and Equipment

- Fuel use by operation and equipment
 - For example: 75HP tractor for mowing

- 1 hour per acre
 - Diesel
 - 1 gallon per hour (per acre, per day, for whole orchard block – as long as we can calculate total fuel use and hours of operation on a per acre basis)
- Land preparation, tillage, orchard management, harvest, clearing, etc

Co-products

- Pruning biomass quantity (per acre per year)
- Cover crops, etc
- Fate/ end-use

Post-Harvest

- generally treat system like a black box – inputs and outputs only is ok
 - System/ process diagram if available
- Inputs
 - Harvested yield accepted (per year)
 - Water, electricity, diesel, gasoline, propane, natural gas, chemical quantities (per year)
 - Anything else
 - Renewable energy (% total)
 - Photovoltaic
 - Solar heating, drying
 - etc
- Outputs
 - Nut product
 - In-shell
 - Shelled
 - Other? (value added?)
 - Co-product
 - Hull
 - Shell
 - Fate/ end-uses
 - Disposal? Composting? Animal feed? etc
 - By-product (Waste streams)
 - Wastewater
 - Other
 - Fate/ end-use

Nursery (if possible – it's usually a very small contributor overall and I'm comfortable using previous findings, but if there is a nursery willing to share data that would be great)

- Can be treated as a black box like post-harvest
- Fertilizer, pesticide, water, materials in per year
- Total saplings produced
- Percent pistachio