**Village of Hope Haiti**

- Village of Hope’s 32-acre campus is located in Ganthier, Haiti, about 30 miles east of Port-au-Prince
- Features a school and medical clinic servicing 650 students and hundreds of community members
- Village of Hope desires an orchard that will diversify the diets of their students by providing them fruit for years to come

**Designing a Fruit Orchard**
- Recommend optimum fruit tree species for orchard
- Determine number of seedlings to plant and propose a layout of orchard
- Design a gravity-fed irrigation system from existing 6,000 gallon hilltop tank
- Estimate cost of materials from local Haitian vendors and stores
- Write a complete set of instructions for planting, watering, harvesting, etc.

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**Fruit Tree Selection**

Five fruit species that are native to Haiti were considered. This list was narrowed to three fruits based on the following criteria:

- Yield amount
- Adaptability to local soil
- Number of trees that can fit in an area
- Water consumption
- Economic potential
- Nutritional value and taste

The three fruit tree species that most satisfied the criteria were:
- Bananas
- Papayas
- Avocados

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**Irrigation Selection, Requirement, and Design**

- Drip irrigation chosen for increased efficiency and desirability for fruit trees
- Using Climwat and Cropwat, irrigation schedules for the fruit species were created using precipitation data from weather stations in Kenscoff and Mirabalais.

**Annual irrigation requirements:**
- Bananas (1st year): 50,958 gallons (192,000 liters)
- Bananas (2nd year): 83,136 gallons (315,000 liters)
- Papayas: 33,476.3 gallons (127,000 liters)
- Avocados: 54,937 gallons (21,000 liters)

- Using Iricad software, a rendering of the irrigation layout was created
  - Green lines indicate drip tubing
  - Pink lines indicate mainlines
  - A culvert pipe water pit will hold water brought from water tank

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**Orchard Layout**

- Rough sketch of the orchard site with dimensions and locations of key features provided by Village of Hope
- Site redrawn in AutoCAD Civil 3D with updated dimensions and seedling placements
- “Buffer” zone created around the burn pile area to ensure that the soil would be suitable for plant growth
- At least 8 feet allotted between rows of trees to allow harvesting equipment to maneuver

- **Bananas (5’ spacing)**
  - 25 rows of 6 planting areas
  - Each planting area has 2 banana trees
  - 300 total trees over 0.133 acres
- **Papayas (6’ spacing)**
  - 12 rows of 13 papaya trees
  - 156 total trees over 0.174 acres
- **Avocados (8’ spacing)**
  - 11 rows of 10 avocado trees
  - 110 total trees over 0.174 acres

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**Economic Analysis**

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<tr>
<th>Category</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Total Cost</th>
<th>Notes</th>
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**Orchard Development and Sustainability**

- Design of Orchard
- Summer 2018 - Implementation
- Upkeep and care by faculty members and visiting teams
- Possibility of new fruit tree species for potential expansion of orchard