A multi-disciplinary, multi-institutional team co-led by the University of Florida and the Agriculture & Food Systems Institute

**Crop Modeling**
The University of Florida, Washington State University, and the University of Illinois at Urbana-Champaign are determining current and future climate and water availability impacts on yield and quality of selected crops.

**Economic Modeling**
The International Food Policy Research Institute and World Agricultural Economic and Environmental Services are extrapolating current and future prices and production costs of selected crops.

**Life-Cycle Assessment (LCA) Modeling**
The University of Arkansas is examining current and potential future fruit and vegetable value chains to identify and evaluate cost-effective adaptation and mitigation opportunities.

**Stakeholders & Extension**
The Agriculture & Food Systems Institute, University of Florida, and Washington State University are engaging with stakeholders and decision makers to ensure models reflect realistic practices and provide actionable information.

USDA/NIFA Award No. 2017-68002-26789
Enhancing the productivity, resilience, and sustainability of domestic fruit and vegetable systems

Objectives

- Identify and test climate adaptation and mitigation intervention strategies that can be applied to enhance sustainability and resilience of fruit and vegetable supply chains in the United States.
- Provide actionable strategies that contribute to a nutritious, reliable, affordable, and environmentally sound food supply.

Desired Impact

- Supply decision makers, growers, and other stakeholders in fruit and vegetable supply chains with science-based evidence to adapt to climate change and mitigate environmental footprints (greenhouse gas emissions, land, and water).
- Sustainably deliver the nutritional value associated with greater consumption of fruits and vegetables, which is central to improving diets and combatting obesity in the United States.

Crop Prioritization

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>Sweet Corn</td>
<td>Spinach</td>
<td>Green Beans</td>
</tr>
<tr>
<td>Potatoes</td>
<td></td>
<td>Carrots</td>
<td></td>
</tr>
<tr>
<td>Grapes</td>
<td>Oranges</td>
<td>Strawberries</td>
<td>Broccoli</td>
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</tbody>
</table>

Modeling Workflow

Mitigation Scenarios → Land Use Change → Domestic Fruit and Vegetable Production and Prices → Domestic Economic Model → International Economic Model → Life Cycle Assessment (LCA) Model

Crop Models → Hydrology Model

Needs: H₂O, N, P → Yield → Scale: Crop Reporting District → Acres Profitability → C and H₂O Footprints (for crop production)