Fruit & Vegetable Supply Chains
Climate Adaptation & Mitigation Opportunities
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 impacts and mitigate greenhouse gas emissions.
- Sustainably deliver the nutritional value associated with greater consumption of fruits and vegetables, which is central to improving diets and combating obesity in the United States.

Approach
- Use crop, economic, and environmental modeling to determine current and future climate and water availability impacts on selected fruit and vegetable crops.
- Investigate mitigation strategies and land use change that may result from future relocation of crops from water-stressed areas to new regions.

Crop Prioritization

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
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</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>Potatoes</td>
<td>Sweet Corn</td>
<td>Spinach</td>
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Crop Modeling Counties

The 32 crop modeling counties chosen for the project are located in 9 of the 14 major watersheds of the contiguous United States.

- Skagit, WA
- Grant, WA
- Benton, WA
- Walla Walla, WA
- Marion, OR
- Umatilla, OR
- Canyon, ID
- Minidoka, ID
- Bingham, ID
- Skagit, WA
- Grant, WA
- Benton, WA
- Walla Walla, WA
- Marion, OR
- Umatilla, OR
- Canyon, ID
- Minidoka, ID
- Bingham, ID
- Yolo, CA
- Monterey, CA
- Fresno, CA
- Yuma, CA
- Rio Grande, CO
- Hidalgo, TX
- Maricopa, AZ

These are the highest target crop acreage counties in the 31 crop reporting districts that collectively include 80% of the area in the United States where the target crops are planted (St. Johns, FL added to better represent potatoes).

Modeling Workflow

Mitigation Scenarios
Land Use Change
Domestic Fruit and Vegetable Production and Prices

Crop Models
Yield
Needs: H₂O, N, P

Hydrology Model
H₂O Availability

Domestic Economic Model
Accres Profitability

International Economic Model

Life Cycle Assessment Model

C and H₂O Footprints
(for crop production)