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 combatting 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

Year 1
- Tomatoes
- Potatoes
- Sweet Corn

Year 2
- Spinach
- Green Beans
- Carrots

Year 3
- Oranges
- Grapes
- Strawberries

Year 4
- Broccoli
- Melons
- Onions

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.

Modeling Workflow

Mitigation Scenarios

Domestic Fruit and Vegetable Production and Prices

Land Use Change

Domestic Economic Model

International Economic Model

Crop Models

Yield

Needs: H₂O, N, P

Hydrology Model

H₂O Availability

Scale Crop Reporting District

C and H₂O Footprints (for crop production)