Weighted Criteria
- Affordability
- Yield
- Water efficiency
- Plants per square foot
- Educational value
- Durability

Problem: Worcester is in a stage 3 drought
Impact: Government has to import more water

Problem Case: Worcester Agriculture
- 2 organic farms
- 62 community gardens
- Inefficient sprinkler and hose irrigation

Solution: Hydroponics
Compared to traditional growing methods, hydroponics use:
- 90% Less Area
- 83% Less Nutrients
- 90% Less Water

Implementing hydroponic systems at Worcester farms and gardens would conserve water and help mitigate drought conditions

Evaluating Hydroponic Systems

Systems for Comparison
- Commercial AmHydro System
- Homemade System

Weighting for Farms
- 40% Less Water
- 20% Yield
- 10% Water efficiency
- 10% Plants per square foot
- 10% Educational value
- 10% Durability

Weighting for Gardens
- 10% Less Water
- 50% Yield
- 25% Water efficiency
- 5% Plants per square foot
- 5% Educational value
- 5% Durability

Problem Case: Worcester Agriculture
- 2 organic farms
- 62 community gardens
- Inefficient sprinkler and hose irrigation

Solution: Hydroponics
Compared to traditional growing methods, hydroponics use:
- 90% Less Area
- 83% Less Nutrients
- 90% Less Water

Implementing hydroponic systems at Worcester farms and gardens would conserve water and help mitigate drought conditions

Implementation in Farms
- Utilize existing infrastructure
- Apply for SARE Grants
- Create a sustainable business model

Implementation in Gardens
- STEM education curriculum
- Simple fundraising efforts
- Adapt for home use

We would like to thank Joe Swartz of American Hydroponics, Bettny Mazur of the Worcester REC, and Friends of the Greenhouse Schenectady for providing their time and expertise to help us with our project

References
https://upload.wikimedia.org/wikipedia/commons/e/e2/Lufa_Farms_Bok_Choy_in_NFT_System.jpg
Homemade System

Commercial AmHydro System
- 288 plants per week
- $3,495 initial cost
- Extremely water efficient
- 4.8 plants per ft²
- Harder to build/replicate
- Extremely durable

HomeMade System
- 0.5 plants per week
- $40 initial cost
- Fairly water efficient
- 0.5 plants per ft²
- Easy to build/replicate
- Not very durable

Farms: AmHydro Commercial system

Gardens: Homemade System