Controlled Environment Agriculture

Inputs:
- Light
- Water
- Growing Medium
- Nutrients
- Temperature
- Oxygen
- Carbon Dioxide
- Pesticides/Fertilizer

Controlled Environment Agriculture

- High Yield
- High Quality
- Produce Safety
- Minimum Resources Used
  - Water, Pesticides, Fertilizers
- Year-Round Production
- Initial Cost
- Maintenance Costs

132% Increase in Veg and Herbs from 2012-2017

Ohio #1 State with Increase of 292%
What can be grown in CAE?

- Not every crop is suited for CEA
- Leafy Greens
- Tomatoes
- Peppers
- Cucumbers
- Strawberries
- Herbs
Controlled Environment Agriculture

- Hydroponics
- Aeroponics
- Aquaponics

Aeroponics

- Developed by NASA in the 1990’s
- Deliver nutrients to plants via mist or vertical drip method
- Uses up to 90% less water than traditional farming

VertiCrop

THE PRIMARY MODULE

Aero Farm

- Newark, NJ
- 9+ farms
- 95% less water
- 390X yield/sq. ft.
- $30 Million
- Old steel mill
- 100 employees

Aero Farm

Urban Gems
Urban Gems

Yield = 9.6# of lettuce in 30 days

Greater Columbus Convention Center

Aquaponics

- Closed System
- Fish provide the nutrients
- Bacteria modify the nutrients
- Circulate the water
- Plants filter the water for the fish
- Multiple types of aquatic inputs
- Theory -> Two harvestable products
- Theory -> Sustainable

Hydroponic Methods

- Nutrient Film Technique
- Deep Water Culture
- Ebb and Flow
- Soilless Culture with Drip
• Tomatoes
• Peppers
• Cucumbers
Questions?
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