TERRa-Fresh
Case Study Overview

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Case Study Overview

- One year planning scenario considering weekly time periods
- 6 crops and 1 potential opportunity
- 6 production regions:
  - AZ: Tucson, Yuma, Phoenix
  - NM: Albuquerque, Las Cruces
  - CO: Aspen

Variables of Interest:
- Prices - USDA historical data
- Volumes - US Census population estimates and USDA food availability data
- Yields - estimated based on agronomic potential of regions of interests, obtained academic studies from U.S universities and NASA weather data
- Production Costs - crop budgets from UC Davis Cost Study Center
- Validity of this case study is subject to accuracy of these parameters estimates*
Production regions satisfy demand from Las Vegas

<table>
<thead>
<tr>
<th>Location</th>
<th>Land Available (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuquerque</td>
<td>60</td>
</tr>
<tr>
<td>Aspen</td>
<td>10</td>
</tr>
<tr>
<td>Las Cruces</td>
<td>30</td>
</tr>
<tr>
<td>Phoenix</td>
<td>40</td>
</tr>
<tr>
<td>Tucson</td>
<td>30</td>
</tr>
<tr>
<td>Yuma</td>
<td>30</td>
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</tbody>
</table>

**Base Crops:**
- Green Beans
- Bell Peppers
- Romaine Lettuce
- Roma Tomatoes
- Cauliflower
- Cucumber

**Market Opportunity:** Celery
Case Study Overview

STAGE 1

Objectives of Stage 1:
• Maximize revenues for a coalition of growers
• Assess risk for growers
• Identify opportunities for growers

✓ When to plant
✓ What to plant
✓ How much to plant
✓ How much labor to hire for the season
Basket of crops considered:

- Bell Peppers
- Cauliflower
- Celery
- Cucumbers
- Green Beans
- Romaine Lettuce
- Roma Tomatoes
Outcomes of Decision Support Models

Model Inputs:
Specific details about production process to help modeling the planning process

- Market Intelligence
- Estimated Prices
- Agronomic Potential
- Estimated Yields
- Other Data
- Crop Parameters
- Location Parameters

Possible Objectives:
- Maximize Profits
- Reduce CO2/water footprint
- Maximize Local Produce

Model Outputs:
Results that can be used to assist the planning process, depending on the desired objective

- Preliminary Profit/Cost Estimation
- Location Selection
- Land Required
- Preliminary Resources Usage

Market Intelligence
Estimated Prices
Agronomic Potential
Estimated Yields
Other Data
Crop Parameters
Location Parameters
Optimization Model

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Thank You

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