**Problem & Background**

- Student Soybean Innovation Competition develops novel soy-based products that can be competitive on the market, help increase the demand for soybeans, and promote environmental stewardship.
- 40 million adults in the US suffer from anxiety disorders, 70 million Americans suffer from sleep disorders, and 3.5 million Americans live with autism.
- Weighted blankets are proven to release hormones (oxytocin, serotonin, and melatonin) that reduce anxiety and promote improved sleep cycles.
- Current weighted blanket average cost is $194.

**Soybean properties taken advantage of**
- Antimicrobial
- Hypoallergenic (when not consumed)
- Non-conductive and can withstand high temperatures

**Proven Benefits**
- Water-resistant weighted blanket
- Inner weighted layer (nylon)
- Soy-based waterproof layer
- Finely milled soy
- Recycled Polyester Fiberfill
- Preservative
- Outer duvet cover (soy fabric)

**Impact & Sustainability**
- Increase soybean demand by ~25,000 bu/yr
- Recycled polyester fiberfill
- Biodegradable insulation
- Improved quality of life
- Improved sleep cycles

**Moving Forward**
- Heating tests under different conditions
- Verify longevity of soy-citric insulation
- Washing machine safe water-repellent
- Testing the market for other potential applications

**Alternative Solutions Considered**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Novel</th>
<th>Complexity</th>
<th>Mass Productibility</th>
<th>Feasibility</th>
<th>Unsaturated Market</th>
<th>Product Improvement</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>N/A</td>
</tr>
<tr>
<td>Soy Putty</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Soy Water Repellant</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>86</td>
</tr>
<tr>
<td>Soy Insulation For Blankets</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>98</td>
</tr>
</tbody>
</table>

**Risk & Hazard Mitigation**

- Citric acid
  - Natural preservative
  - No potential for allergic reactions
- Water-Resistant Layer
  - Protects soy within the inner layer from liquids
- Soy Allergies
  - All soy is contained, which reduces risk of consumption

**Economic Analysis**

- Bed Linens: $14.6 billion (Total Market)
- Utility Bedding: $3 billion (Addressable Market)
- Ages 25-44: $1.3 billion (Target Market)

**Final Assessment**

- High Heat Holding Capacity
  - 14% more efficient at holding heat
  - Holds body heat of user 45 minutes longer
- Low Cost
  - Retail for ~ $123
  - 35% cheaper than average weighted blanket
- Antimicrobial
  - Soy peptides proven to inhibit bacterial growth
- Environmentally Friendly
  - Soy is a renewable resource
  - Soy within is biodegradable
  - Soy is non-toxic

**Product Final Design**

- Water-resistant weighted blanket
- Inner weighted layer (nylon)
  - Soy-based waterproof layer
  - Finely milled soy
  - Recycled Polyester Fiberfill
  - Preservative
- Outer duvet cover (soy fabric)