Our Vision

Product Functions
- Retains moisture and temperature
- Improves plant and soil health during biodegradation
- 100% biodegradable
- 99.5% soybean by weight
- Reduce manual labor for removal of film
- Reduce the cost of fertilization

Costs
- Manufacturing Cost: $174/roll
- Selling Price: $289/roll

Market
- Market share of $57.0M (1%)
- 76,734 tons soybean sales/year
- Targeted for Indiana farmers
- Can be customized to meet different crop requirements

Price Comparison

Contact Us

Young Choi
Senior ABE - MSE
TEAM LEAD

Loan Cao
Senior ABE - ENRE
LEAD DEVELOPER

Sophie Kwon
Junior - ME
LEAD RESEARCHER

“SILM provides farmers a long term solution for environmental and economic sustainability”
Technical Specifications

Conventional Film Functions
- Made with polyethylene (PE) plastics
- Require removal after each use
- External fertilizer application
- Contaminates soil while degrading

SILM Functions
- Optimal combination of soy-based fiber, protein, and glycerin
- NaOH, succinic acid used for pH control for crosslinking pH 7 - pH 11 - pH 4.5
- Minimal impact on soil health
- Promote plant growth
- Maintain temperature and moisture of soil
- Biodegrade within 6 months

Potential Problems
- Long term exposure
- Require proper usage
  - Placement
  - Storage
- A reason for farmers to switch from conventional films

Structural Integrity
- 38.015 N, 0.01 Gpa
- Determined by fiber and protein composition

Environmental Impact
- Protein: provides organic nitrogen
- Fiber: provides structural stability
- Glycerin: aids metabolism of nitrogen-fixing bacteria
- Soybean meal: NPK 7-1-5 fertilizer
- NaOH: increases soil structural stability
- Succinic Acid: promotes Krebs cycle and is used in food and pharmaceuticals

Manufacturing Process
- Reinforced plastic extrusion line
- Requires less heat, pressure, and power

Product Summary
- 99.5% soy materials by weight
- Beneficial for plant growth
- Innovative design with wide application
- Operational Temperature: 0°C ~ 30°C
- Market share of 57.0M (1.00%)
- 76,734 tons soybean sales/year

Potential Improvements
- Refinement of NPK ratio
- Reduce cost of manufacturing
- Alternative colors for different crops and usage requirements
  - Red for vegetation
  - Black for weed suppression