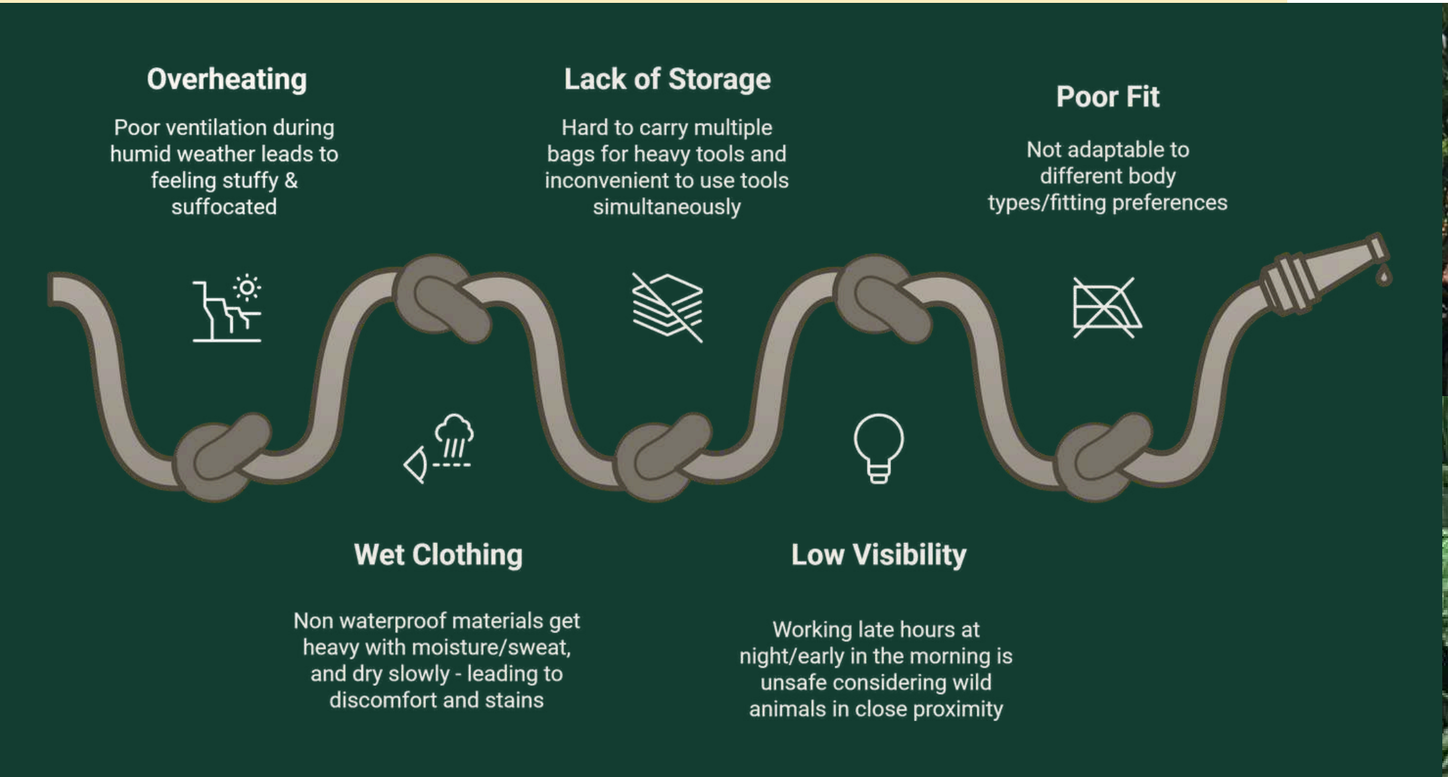

KISAN QUEST
MRIDA
Sanskrit for *soil*, the root of life and labor
KiSAN QUEST, 2025

AAREY VASUNDHARA, MUMBAI

AN AGRI-ENTREPRENEURIAL ECOVILLAGE FIELD VISIT

We had the incredible opportunity to visit Aarey Vasundhara EcoVillage, a leading agri-entrepreneurial enterprise. It specializes in nursery farming and hydroponics, blending Indian and exotic plant species.

Through direct engagement with farmers, we gained vital insights into weather, ergonomic, social, emotional, and cognitive factors essential for good design. This experience significantly enriched our understanding and has strongly influenced us.



SAMPLE USER PERSONA

37 YEARS OLD | FARMER | UTTAR PRADESH | ₹12,698

RAJESH KUMAR

- Represents 85% of Indian farmers
- Average land: 0.38 hectares marginal farmers
- Monthly income jumped from ₹10,218 to ₹12,698 (2020-2021)
- Only 0.5% received formal agricultural training

DEMOGRAPHIC INFO

- Education: 8th standard (32.1% have secondary education)
- Family: Wife, 2 children, elderly father
- Technology: Smartphone
- Consults family and peer farmers for advice

MOTIVATIONS

- Comfort & Safety
- Storage Efficiency
- Value for Money

DAILY STRUGGLES

- Works 12-14 hours during peak seasons (Apr-Jun, Oct-Dec)
- Heat exhaustion causes 30-40% productivity loss in summer
- Loses 2-3 small tools every 6 months or so (₹500-800 value)
- Current plastic raincoat tears within 20 days
- Animal encounters during monsoon season work

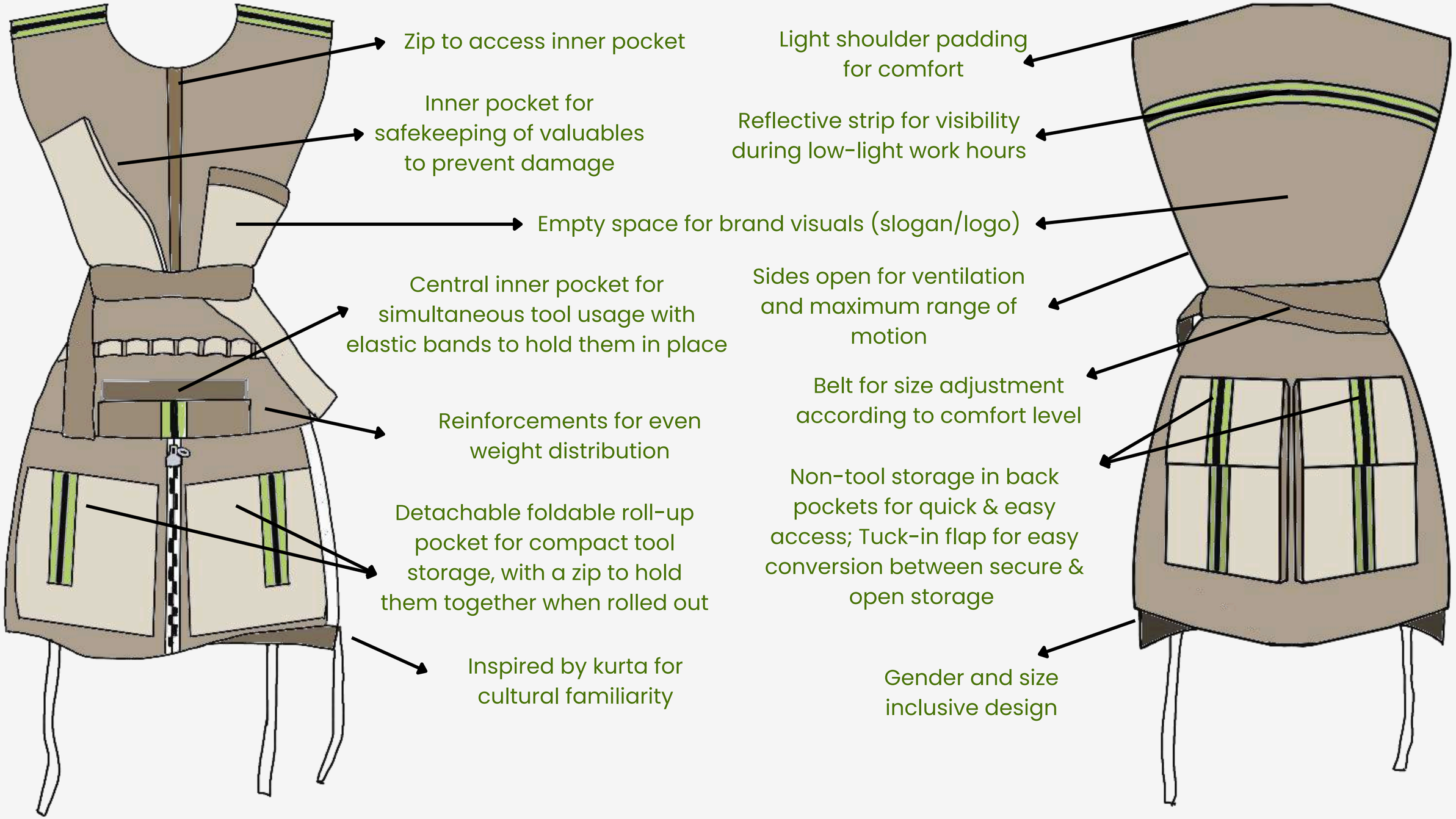
USER NEEDS

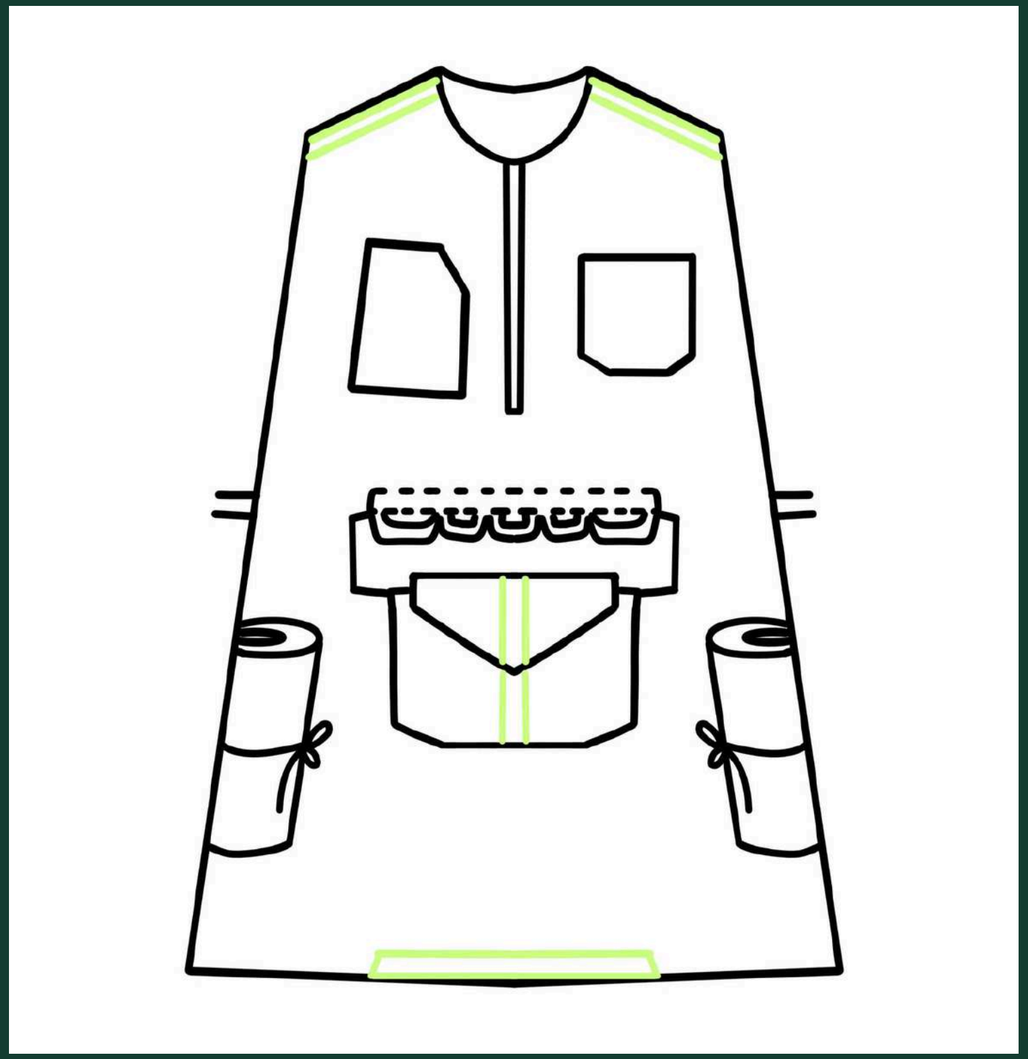
- Breathability to prevent overheating and discomfort
- Secure and easily accessible pockets
- A comfortable fit that allows for a full range of movement
- Waterproof material to keep the user dry
- Reflective elements to ensure visibility

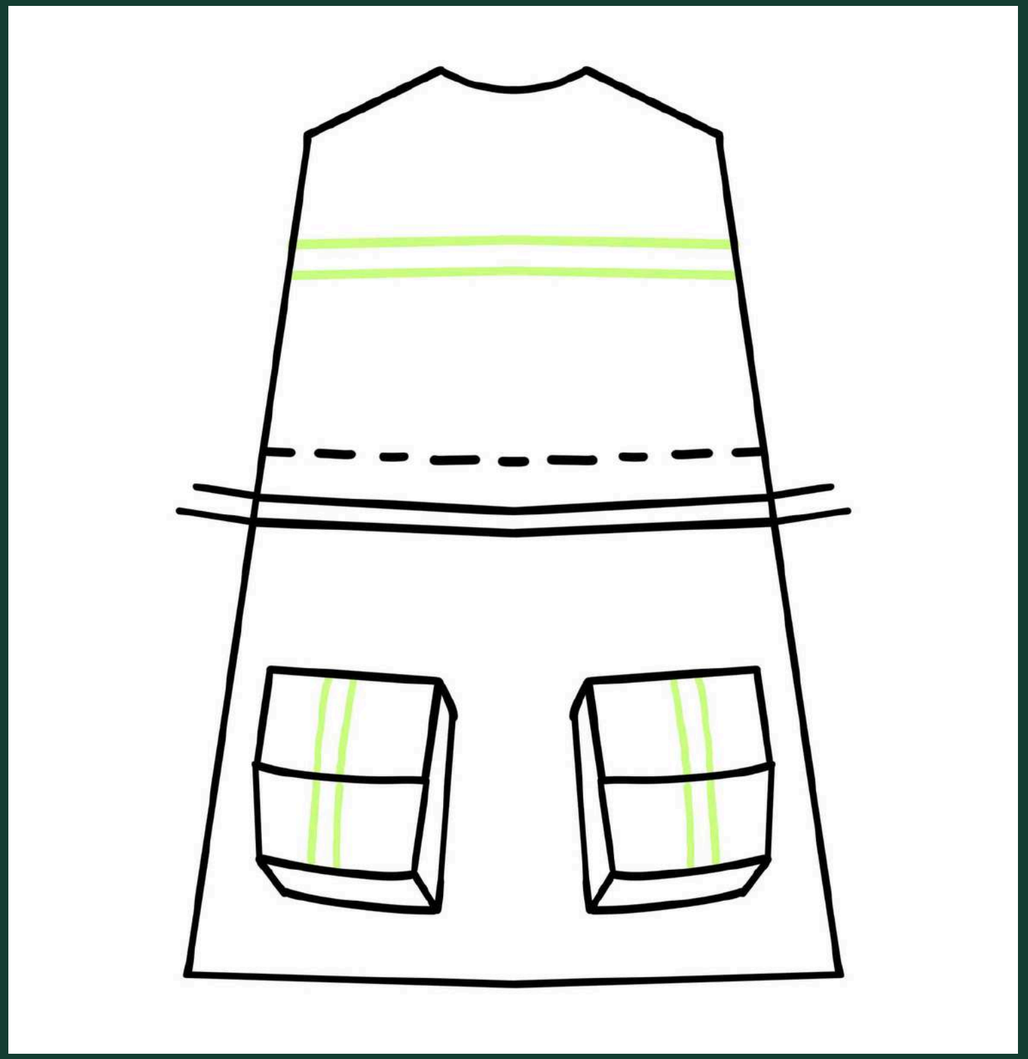
Presenting,

मृदा

Mrida is a farmer-friendly jacket inspired by the kurta, combining cultural familiarity with modern functionality. It features breathable design, reflective visibility, multiple tool and storage pockets, and an adjustable, inclusive fit - making it a reliable companion for farmers across all seasons.


Zip to access inner pocket
Inner pocket for safekeeping of valuables to prevent damage
Empty space for brand visuals (slogan/logo)
Central inner pocket for simultaneous tool usage with elastic bands to hold them in place
Reinforcements for even weight distribution
Detachable foldable roll-up pocket for compact tool storage, with a zip to hold them together when rolled out
Inspired by kurta for cultural familiarity
Light shoulder padding for comfort
Reflective strip for visibility during low-light work hours
Sides open for ventilation and maximum range of motion
Belt for size adjustment according to comfort level
Non-tool storage in back pockets for quick & easy access; Tuck-in flap for easy conversion between secure & open storage
Gender and size inclusive design





TECHNICAL DRAWINGS

MATERIAL RESEARCH

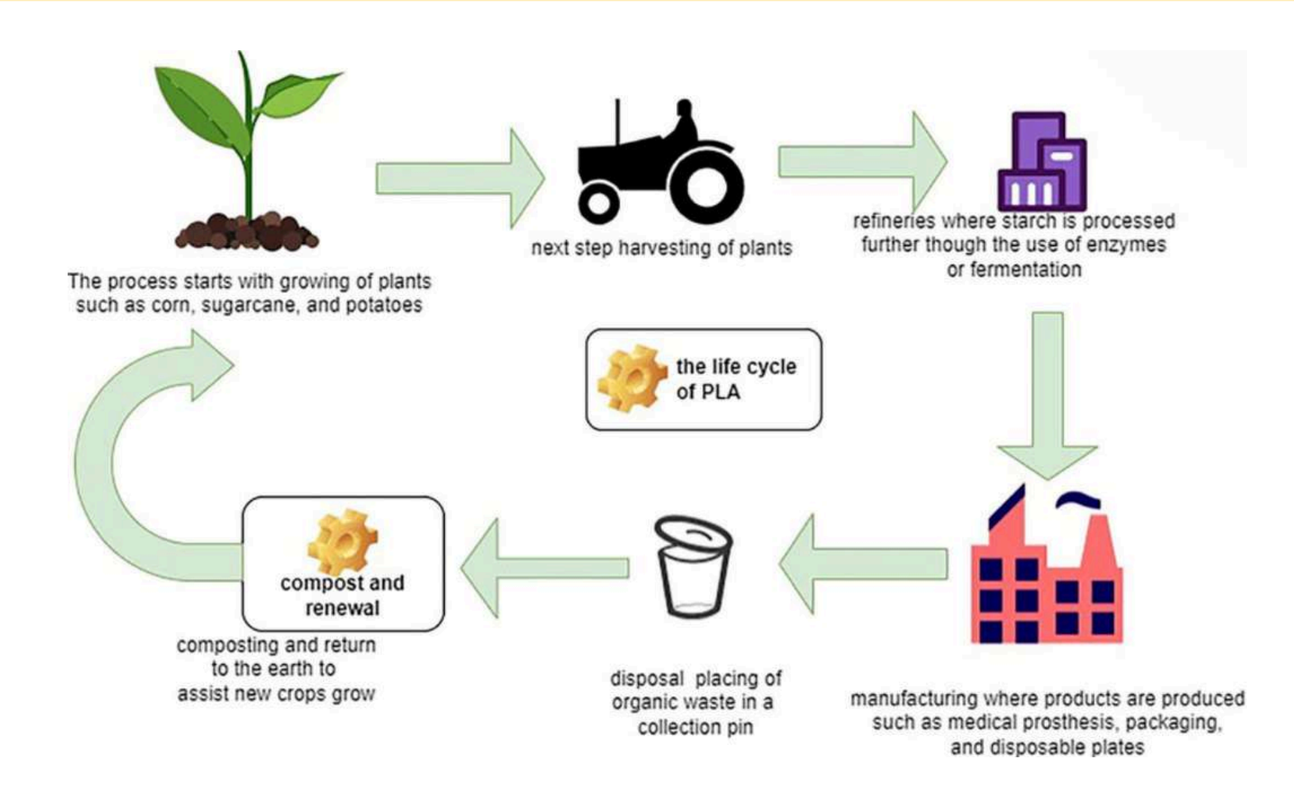
Tensile Strength	4-6 g/den	Durable fabric able to resist tearing during field work
Elongation at Break	Moderate (10-20%)	Sufficient flexibility while maintaining shape
Moisture Regain	0.4-0.6%	Low moisture absorption, quick drying after rain exposure
UV Resistance	Good (with additives)	Provides sun protection, extends material lifespan
Biodegradability	12-24 months in soil	Eco-friendly disposal with minimal soil pollution
Thermal Properties	Glass transition ~60°C	Comfortable in Indian heat but limits high temperature use
Thermal Resistance	Up to 175°C for advanced grades	Emerging PLA formulations can withstand higher temps (research ongoing)
Odor Resistance	Natural antimicrobial action	Reduced odor after long wear
Breathability	High due to fiber porosity	Comfort in humid and hot agricultural environments

Chosen Material: Polyurethane Laminate (PUL)

Farmer Crop Waste Incentive

As part of the sustainable sourcing model, farmers who supply their crop waste (e.g., straw residues) directly to authorized collection centers can avail jackets at a reduced price. This initiative encourages waste valorization, provides farmers with additional income streams, and reduces raw material costs downstream, making PLA jackets more affordable and promoting circular economy principles in rural agricultural communities.

PRODUCTION PROCESS



The cycle begins with renewable resources, such as corn, sugarcane, potatoes, or agricultural waste like rice and wheat straw. This feedstock is processed through fermentation and enzymatic hydrolysis to create the base PLA polymer. This polymer is then manufactured into products, such as fabrics, and at the end of their life, these products can be composted. This final step allows the organic waste to return nutrients to the earth, which helps new crops grow, thus completing a closed-loop system that valorizes agricultural waste and reduces environmental impact.

Base Polymer: Polylactic Acid (PLA) is a biodegradable aliphatic polyester made of repeating lactic acid units.

Feedstock: Primarily derived from lignocellulosic agricultural waste (e.g., rice or wheat straw), processed via enzymatic hydrolysis to fermentable sugars.

Molecular Design: by controlling molecular weight and discrete molecular index we can optimize PLA fiber strength, flexibility, and processability.

Fiber Formation: Melt spinning and texturing techniques convert PLA resin into continuous filaments suitable for yarns and fabrics with tailored mechanical properties

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THANK YOU!