



# Low-Cost, Portable Paddy Transplantation Machine

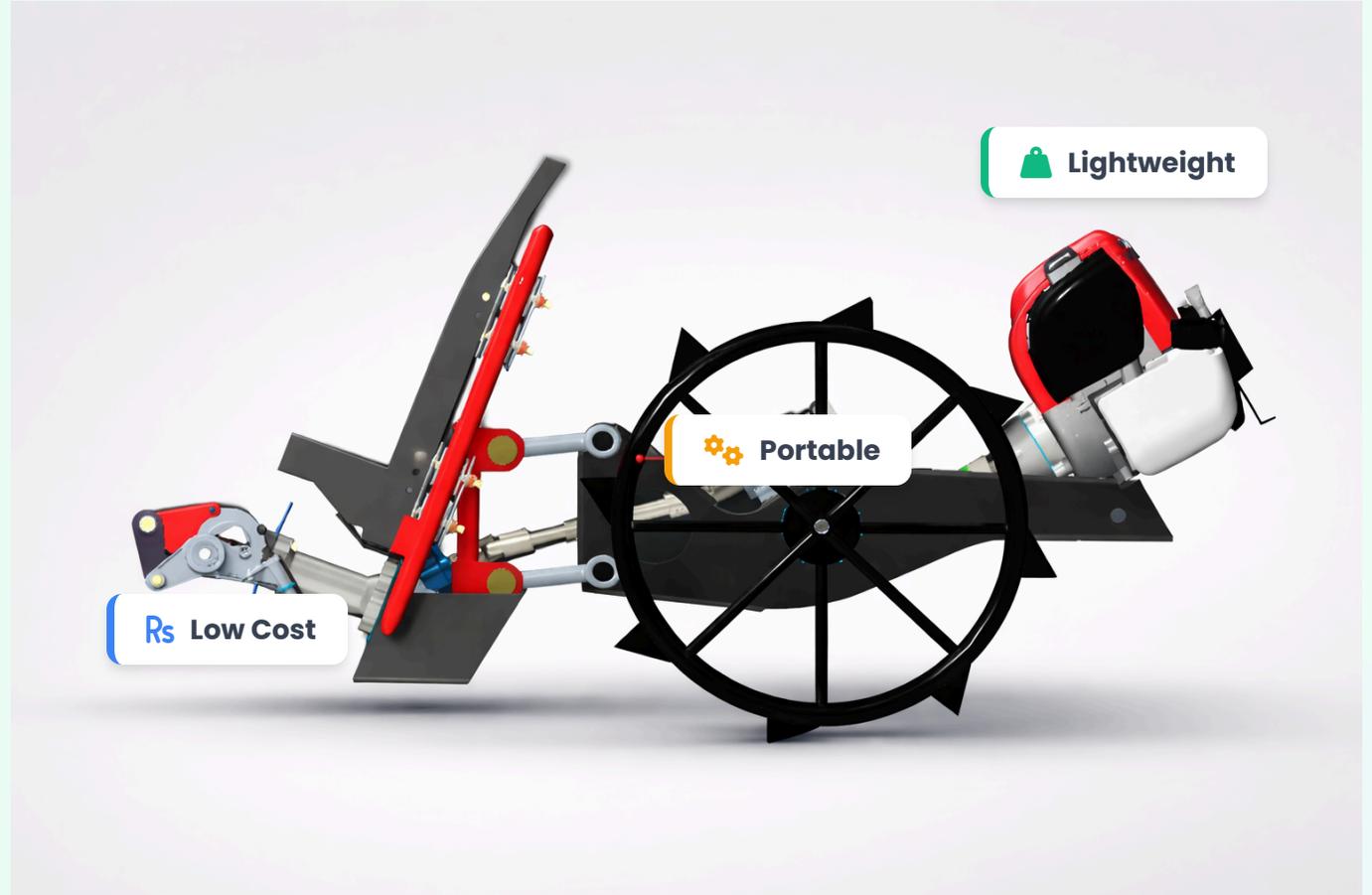
Revolutionizing agriculture for small & marginal farmers through affordable mechanization.



APPLICANT  
**Vedtron Innovations**



FOCUS AREA  
**Affordable Farm Mechanization**



# Problem Statement: Paddy Transplantation

Critical bottlenecks facing small & marginal farmers today



## Operational Issues

- ! Highly Labor-Intensive**  
Manual transplantation is back-breaking and slow, requiring massive manpower.
- 👤 Acute Labor Shortage**  
Unavailability of farmhands during peak planting season delays sowing.
- 📈 Rising Wages**  
Rapidly increasing daily wages drastically reduce profit margins.
- 🌱 Yield Impact**  
Delays in transplantation directly result in lower crop yields.



## Existing Tech Gaps

- 💰 Prohibitive Cost**  
Existing riding-type transplanter cost ₹2-3 Lakh, unaffordable for small farmers.
- 📦 Heavy & Bulky**  
Large machines are difficult to transport to remote village fields.
- 🏠 Unsuitable for Fragmentation**  
Not designed for small, irregular, and fragmented landholdings common in India.

✖ **Gap: No viable solution for the smallholder.**

# Ground Reality: The Data

Why the current ecosystem fails the smallholder farmer



**8-12**

**LABORERS / ACRE**

Required daily for manual transplantation during peak season.

Rs

**₹2-3L**

**MACHINE COST**

Current riding-type transplanters are financially out of reach.



**Heavy**

**LOGISTICS**

Current machines are bulky, requiring trucks to move between villages.



**High**

**DRUDGERY**

Manual bending causes severe back pain and health issues.

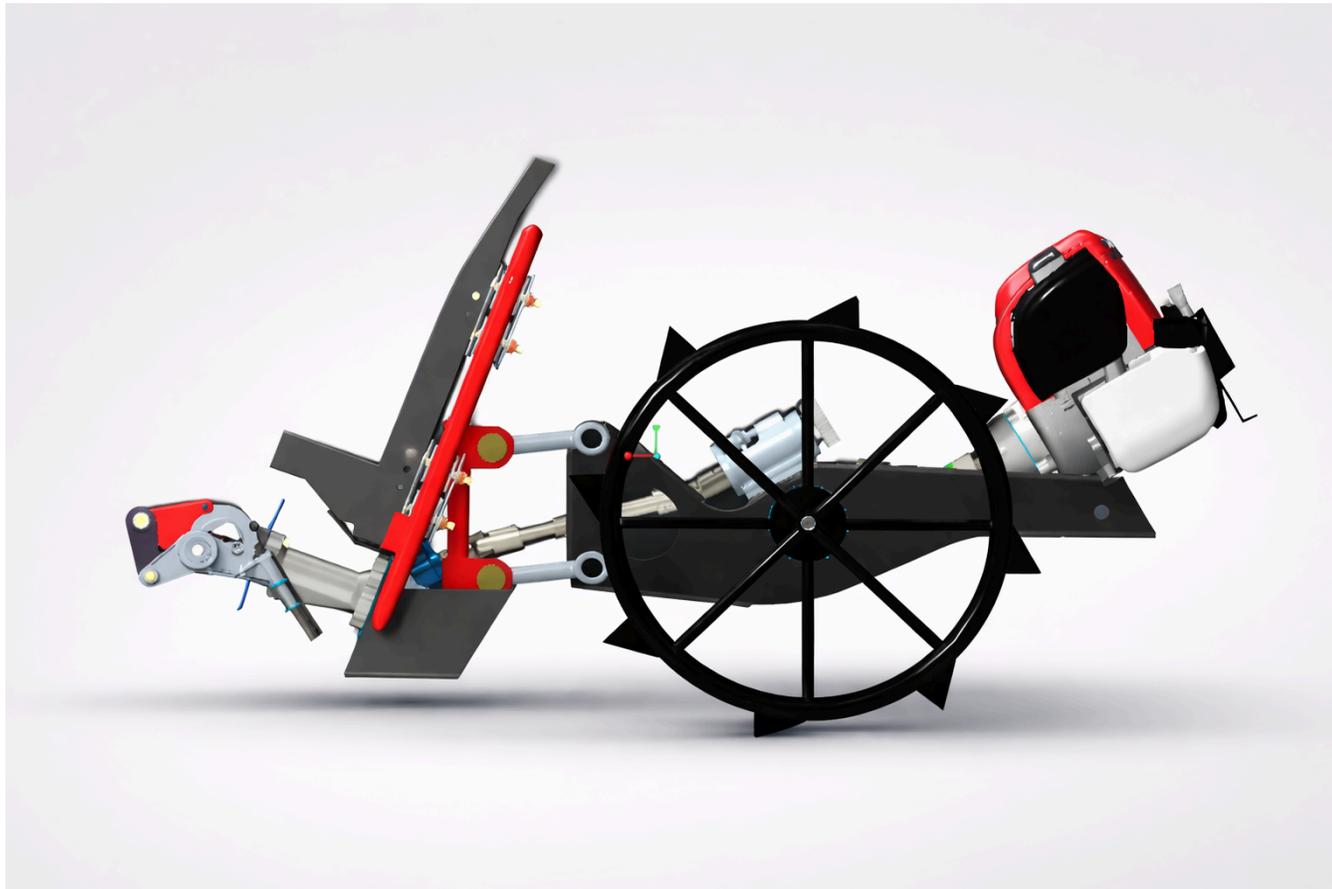
## The Critical Gap

There is a clear **Technology & Affordability Gap**. The market offers either expensive heavy machinery or relies on inefficient manual labor. Small farmers are left with no viable middle-ground solution.

**90%** of farmers underserved

# Our Innovation: **The Portable Transplanter**

Mechanization designed specifically for the Indian smallholder.



## **Low-Cost & Affordable**

Engineered to cost ₹40k-60k, fitting the budget of small farmers without heavy loans.



## **Small Farm Design**

Compact footprint suitable for small and fragmented landholdings where tractors fail.



## **Ultra Portable**

Can be carried by two persons or transported in a standard Auto/Tuk-tuk.



## **Simple Operation**

Semi-mechanized system requiring minimal training and easy village-level repair.

# Key Innovation Highlights

What makes VEDTRON unique compared to existing market solutions.



## Affordability First

Focus on cost-effectiveness rather than heavy automation, making it accessible to marginal farmers.



## Farmer-Friendly Design

Ultra-lightweight structure minimizes soil compaction and allows easy maneuvering in wet fields.



## Small Engine Efficiency

Optimized small engine less fuel consumption and minimal maintenance costs.



## Simple Mechanics

Simplified mechanical system allows for easy repairs by local village mechanics without specialized tools.



## Field-Validated

Designed based on iterative feedback from real farmers to solve actual ground-level pain points.



## Modular Architecture

Components are modular, allowing for quick servicing and easy replacement of worn-out parts.

# Technical Overview: Working Principle

Precision engineering simplified for the field.



## Seedling Pickup

Precision mechanical fingers gently pick seedlings without damaging the delicate root structure.



## Placement Control

Adjustable mechanism ensures uniform planting depth and consistent spacing between hills.



## Paddle Traction

Specialized paddle wheels provide superior grip in wet, muddy fields without sinking.



## Ergonomic Handle

Balanced design with adjustable handlebars reduces operator fatigue during long hours.



## Durable Frame

Constructed from lightweight, corrosion-resistant materials for longevity in wet conditions.



### CURRENT TECHNOLOGY STATUS

**Design Completed, Prototype Fabrication in Progress**



# Cost & Feasibility: Affordability Advantage

Economic benefits and rapid return on investment for small farmers

## Affordability

Rs Target Price Range

**₹40,000 – ₹60,000**

vs. ₹2.5 Lakh for existing machines

### Operating Costs

Low fuel consumption and minimal maintenance requirements designed for rural budgets.

### Subsidy Potential

Eligible for SMAM & State government farm mechanization subsidies (40-50%).

## Return on Investment

 Payback Period

**2-4 Seasons**

Based on labor cost savings per acre

### Accessibility

Affordable for individual ownership, unlike larger machines that require rental.

### Shared Usage

Ideal for FPOs, Self-Help Groups (SHGs), and Custom Hiring Centers (CHCs) to maximize utility.

 Break-even point achievable within first year.

# Target Beneficiaries: Who We Serve

Empowering the grassroots of Indian Agriculture



## Primary Farmers

### ✓ Small & Marginal Holders

Farmers owning  $\leq 2$  hectares of land, representing 86% of Indian agriculturists.

### Rs Cost-Conscious Users

Those currently dependent on manual labor due to high machinery costs.

### 📍 Fragmented Land Owners

Farmers with scattered plots where large machinery cannot maneuver.



## Service Entrepreneurs

### 👤 Rural Youth Entrepreneurs

Young villagers looking to start Custom Hiring Centers (CHC) with low investment.

### 🏠 FPOs & SHGs

Farmer Producer Organizations and Self-Help Groups offering shared rental services.

### 🔧 Village-Level Service Agents

Local mechanics or service providers expanding their offering portfolio.

**i** Creating micro-entrepreneurship opportunities.

# Expected Impact: Field Outcomes

Tangible benefits for the farmer and the agricultural ecosystem



## 80%

### LABOR REDUCED

Drastic reduction in dependency on manual labor during peak season.



## Lower

### INPUT COSTS

Significantly reduced transplantation cost per acre, increasing net profit.

## High

### CROP YIELD

Timely planting ensures optimal growth window and better harvest.



## Zero

### DRUDGERY

Eliminates back-breaking bending, improving farmer quality of life.

## Broader Ecosystem Impact

Beyond individual fields, this innovation triggers **Systemic Change**. It solves critical labor shortages and drives the adoption of modern mechanization among the smallest landholders.



**INCREASED**  
Adoption

# Market Opportunity: Scalability

Massive addressable market with strong structural demand drivers



## Market Size

### Massive Cultivation Area

India has 40+ million hectares under paddy cultivation, the largest in the world.

### Smallholder Dominance

Majority of farmers are small & marginal, facing a complete lack of suitable machinery.

### Adoption Potential

Capturing even 1% of the market represents a multi-crore revenue opportunity.

✔ Large Unmet Need: High Volume Potential



## Demand Drivers

### - Labor Scarcity

Rural workforce migration to cities is creating an urgent need for mechanization.

### Rising Cultivation Costs

Farmers are desperate to cut labor costs to maintain profitability.

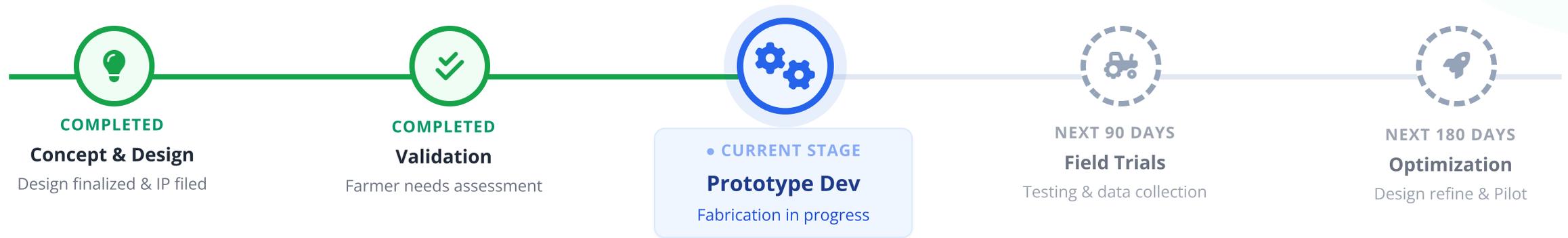
### Government Support

Heavy subsidies and schemes (SMAM, RKVY) favor small farm mechanization adoption.

↗ Timing: Perfect alignment with market trends.

# Current Status & Roadmap

From concept to field deployment: Our development journey.



## Achieved Milestones

- ✓ **Conceptual Design:** Complete CAD modeling and simulation tests.
- ✓ **Market Validation:** Surveyed 50+ farmers to validate pain points.
- ✓ **Material Sourcing:** Vendors identified for lightweight chassis materials.

## Immediate Goals (Next 6 Months)

- **Prototype Fabrication:** Complete first functional unit (Month 1-2).
- **Field Trials:** On-farm testing in wet conditions (Month 3-4).
- **Pilot Deployment:** Deploy 5 units with partner FPOs for feedback (Month 5-6).

# Support Required from R-ABI

Strategic resources needed to accelerate from prototype to product.



## Prototype Development Grant

Funding support for procuring raw materials, fabrication costs, and tooling required to build the beta prototype.

- ✓ Fabrication Materials
- ✓ Engine Procurement



## Field Testing & Validation

Access to university research farms and KVKs (Krishi Vigyan Kendras) for standardized performance testing and certification.

- ✓ Performance Certification
- ✓ Soil Impact Analysis



## Technical & IP Mentorship

Expert guidance on Design for Manufacturing (DFM), cost reduction strategies, and intellectual property rights filing.

- ✓ Design Optimization
- ✓ Patent Filing Support



## Market Linkage & Deployment

Connections with Farmer Producer Organizations (FPOs) and Custom Hiring Centers for pilot deployment and feedback.

- ✓ FPO Partnerships
- ✓ Dealer Network Access



### Incubation Goal

Transform prototype into a market-ready product within 12 months.

ESTIMATED TIMELINE

**1 Year**

TARGET READINESS

**TRL 8**

# Alignment with **RKVY-RABI Objectives**

How VEDTRON supports the core mission of agricultural advancement and rural innovation.



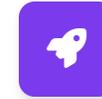
## Farm Mechanization

Directly contributes to the mandate of increasing farm mechanization coverage across India.



## Cost Optimization

Significantly reduces the cost of cultivation, directly impacting and enhancing farmer income.



## Agri-Entrepreneurship

Promotes rural entrepreneurship by enabling youth to offer custom hiring services.



## Inclusive Growth

Specifically targets small & marginal farmers who are often left out of large-scale mechanization.



## Sustainable Tech

Encourages sustainable practices with locally serviceable technology that fits rural ecosystems.



## Goal Alignment

Perfectly aligned with RKVY's goal of fostering innovation and agribusiness development.

# Make Farmers **Smart**

"This innovation delivers practical, affordable mechanization for India's small farmers. With R-ABI support, we will scale a high-impact, farmer-centric product."

Let's Transform Agriculture →

# THANKS Thank You!

Open for Questions & Discussion

## CONTACT INFORMATION



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