

## Project Design Phase

### Problem – Solution Fit Template

Date	04 February 2026
Team ID	LTVIP2026TMIDS55682
Project Name	Exploratory-Analysis-Of-RainFall-Data-In-India-For-Agriculture
Maximum Marks	2 Marks

#### 1. Target Customer

Primary Customers: Farmers dependent on rainfall for crop cultivation.

Secondary Customers: Agricultural planners and policymakers.

#### 2. Core Problem Identified

Farmers face uncertainty due to unpredictable rainfall patterns. Lack of reliable short-term rainfall prediction leads to poor irrigation planning, incorrect fertilizer usage, crop damage, and financial loss.

#### 3. Existing Situation

- Farmers rely on traditional knowledge or delayed weather forecasts.
- Manual decision-making increases risk during irregular climate conditions.
- No simple, localized prediction tool accessible via web interface.

#### 4. Proposed Solution

The proposed solution is a Machine Learning-based Rainfall Prediction System that uses a Random Forest classification model (85.69% accuracy) deployed through a Flask web application. The system accepts weather parameters and provides real-time rainfall probability along with agricultural advisory.

#### 5. Problem–Solution Fit Justification

- The system directly addresses rainfall uncertainty.
- Provides instant prediction instead of delayed forecasting.
- Offers actionable advisory recommendations (irrigation, fertilizer planning).
- Simple web interface ensures usability for non-technical users.

#### 6. Behavioral Fit & Adoption Strategy

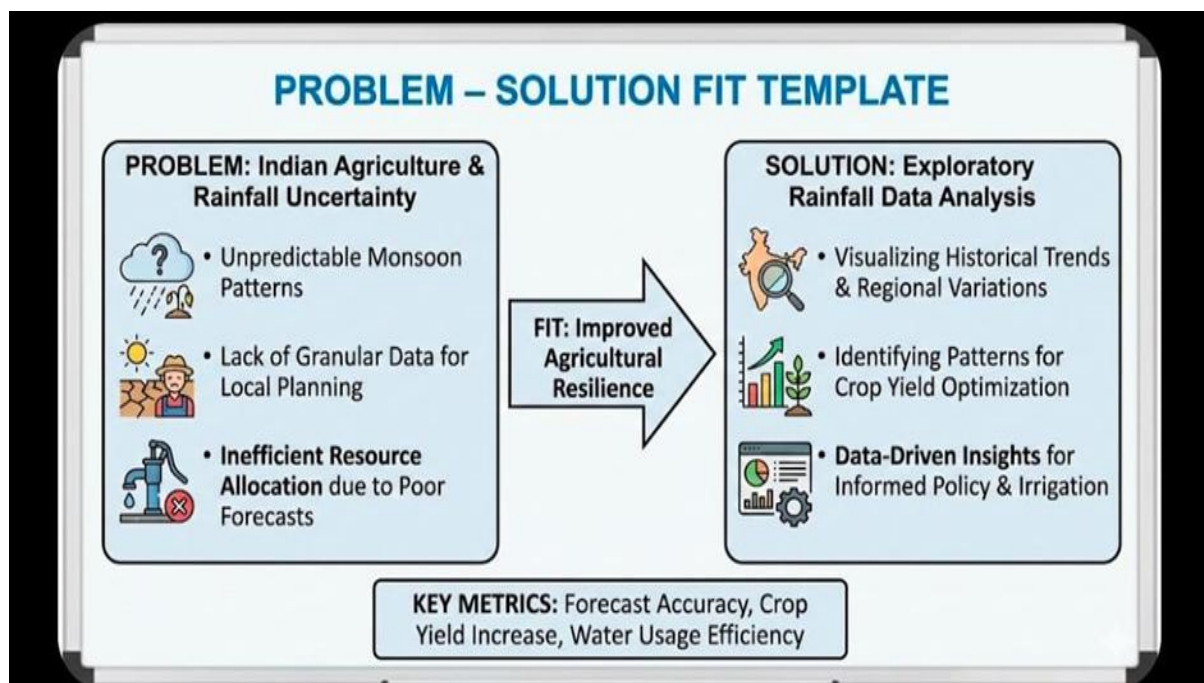
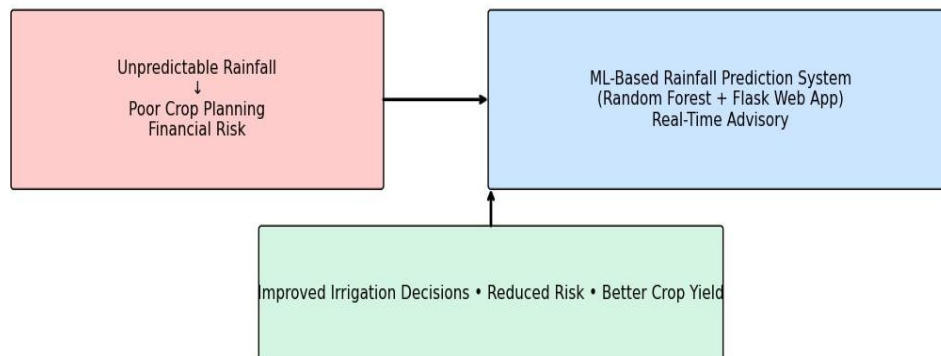
- Farmers already use mobile browsers → Web-based solution fits existing behavior.
- Simple input form reduces complexity.

- Advisory recommendations build trust through practical value.
- Frequent usage encouraged during planting and irrigation cycles.

## 7. Value Proposition

The Rainfall Prediction System reduces agricultural risk, improves decision-making, and enhances crop productivity by combining data-driven prediction with real-time advisory support.

Problem - Solution Fit: Rainfall Prediction System



## Template

Define customer segments, fit into customer limitations		
<b>1. CUSTOMER SEGMENT(S)</b> <a href="#">Add</a> Farmers ----- Researchers ----- Public ----- ----- -----	<b>6. CUSTOMER LIMITATIONS</b> <small>EG. BUDGET, DEVICES</small> <a href="#">Add</a> Does not provide correct information(Quarantee) ----- knowledge person ----- ----- -----	<b>5. AVAILABLE SOLUTIONS</b> <small>PLUSES, MINUSES</small> <a href="#">Add</a> Former benefits ----- Help researching for studies ----- ----- -----
Focus on problem, tap into behavior, understand root cause		
<b>2. PROBLEMS / PAINS</b> <small>- ITS FREQUENCY</small> <a href="#">Add</a> Server down(Maintenance) ----- Accuracy issues ----- ----- -----	<b>9. ROOT / CAUSE OF PROBLEM</b> <a href="#">Add</a> Weather conditions ----- climate changes ----- ----- -----	<b>7. BEHAVIOR</b> <small>- ITS FREQUENCY</small> <a href="#">Add</a> Weather report ----- Change of temp ----- ----- -----
Identify strong triggers & emotions		
<b>3. TRIGGERS</b> <a href="#">Add</a> Improved farming ----- <b>4. EMOTIONS</b> <a href="#">Add</a> Does not correct information(change climate) ----- ----- -----	<b>10. YOUR SOLUTION</b> <a href="#">Add</a> Benefits for farmers ----- Growth cultivation ----- Providing climate details ----- -----	<b>8. CHANNELS OF BEHAVIOR</b> <b>ONLINE</b> <a href="#">Add</a> Access to website ----- <b>OFFLINE</b> <a href="#">Add</a> Read newspaper ----- -----