

Project Design Phase

Problem – Solution Fit Template

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| Date | 15 February 2026 |
| Team ID | LTVIP2026TMIDS42653 |
| Project Name | Rainfall Prediction System 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

