Project Design Phase

Problem – Solution Fit Template

Date	19 February 2026
Team ID	LTVIP2026TMIDS66153
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