



## INTERNAL PROJECT

# Software Requirements Specification

## SASA SHAMBA

Version: 0.1

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# 1 Document Information

Field	Value
Project Name	SASA SHAMBA
Version	0.1
Date	2025-08-07
Project Manager	TBD
Tech Lead	TBD
Qa Lead	Tester
Platforms	[‘Android’, ‘iOS’]
Document Status	Draft



## 2 Project Overview

### 2.1 What Are We Building

#### 2.1.1 System Function

An intelligent agricultural mobile application designed to assist farmers with farm setup, crop management, weather services, personalized AI-driven agronomy recommendations, and image-based crop disease diagnosis.

#### 2.1.2 Users

- Farmer

#### 2.1.3 Problem Solved

The application addresses the need for accessible, data-driven farming assistance. However, it currently suffers from critical flaws such as providing inaccurate AI disease diagnoses, non-contextual crop advice (e.g., tomato tips for all crops), and a partially functioning user interface (language and dark mode issues), which undermine its reliability and utility.

#### 2.1.4 Key Success Metric

Increase the Overall Quality Percentage from 71.9% to over 95% by resolving all identified key findings and failed test cases.

## 2.2 Scope

### 2.2.1 In Scope

- User Authentication (Login, Logout, Registration)
- Farm & Profile Management (Add/Edit Farm, Upload Images)
- Crop Management (Add New Crop, Update Status)
- Weather & Advisory Services (Forecasts, AI-driven Tips)
- Personalized AI Recommendations ('Ask AI')
- Image-based AI Disease Diagnosis ('AI Scan')
- Task Management (Add/View/Mark Complete Tasks)

- UI Features (Language Change, Light/Dark Mode)

## 2.2.2 Out Of Scope

- Increasing the variety of supported crops (e.g., Agroforest).
- Advanced reminder notifications (per recommendation, as current implementation failed).
- Automated identification of different leaf/plant types beyond disease.
- Community/Social Features.
- Logistics Management.
- E-commerce/Store Integration.
- Soil AI Scan (per recommendation).



# 3 User Requirements

## 3.1 Authentication User Management

Feature Code	I Want To	So That I Can	Priority	Notes
FT-AUTH-LOGIN	Log in to the app securely	Access my farm dashboard and other features.	Must	Login flows for valid and invalid credentials passed testing.
FT-AUTH-REG	Register a new account	Start using the application.	Must	Passed testing.

## 3.2 Core Business Features

Feature Code	I Want To	So That I Can	Priority	Notes
FT-AISCAN-DIAGNOSE	Scan a plant leaf using my camera	Get an accurate and relevant diagnosis of its disease.	Must	CRITICAL FAILURE: The AI provides diagnoses that are different from the real disease and misidentifies plants (e.g., reports 'apple leave' for every plant).
FT-WEATHER-TIPS	Receive weather condition tips	Get advice that is relevant to the specific crops I am growing.	Must	CRITICAL FAILURE: The app provides generic tips about tomato plants, regardless of the

Feature Code	I Want To	So That I Can	Priority	Notes
				user's actual crop.
FT-TASK-RECUR	Create a recurring task (e.g., weekly)	Schedule and track regular farm activities without manual re-entry.	Must	FAILED: The recurrence icon and auto-generated next dates do not appear after creating a recurring task.
FT-TASK-REMIND	Set a reminder for a task	Receive a push notification before it is due.	Must	FAILED: Push notifications for reminders are not being triggered or received.
FT-CROP-UPDATE	Update the growth stage/ status of my crop	Track its progress and receive timely insights.	Should	FAILED: The status update is not reflected in the 'insight' section.
FT-AISCAN-COMPARE	Compare two images of a plant side-by-side	Visually track the progression of its health or disease.	Should	FAILED on iOS: The feature only shows the details for one of the two selected plants.

### 3.3 Additional Features

Feature Code	I Want To	So That I Can	Priority	Notes
FT-UI-LANG-SWITCH	Switch the app's language (e.g., to Swahili)	Use the app in my preferred language.	Should	FAILED: The language change does not apply to the dashboard, and on the 'Ask AI'

Feature Code	I Want To	So That I Can	Priority	Notes
				screen, the formatting is incorrect.
FT-UI-DARKMODE	Enable dark mode	Have a comfortable viewing experience in low light.	Should	FAILED: Dark mode is incomplete, with some places not changing and text becoming hard to read.



# 4 Detailed Feature Requirements

## 4.1 Ft Aiscan Diagnose

### 4.1.1 Priority

Must Have

### 4.1.2 User Story

As a farmer, I want to take a picture of a diseased plant leaf so that the app can accurately identify the disease and provide treatment steps.

### 4.1.3 Preconditions

User has granted camera and storage permissions.

### 4.1.4 Postconditions

The app returns the correct disease name with a high confidence score and relevant, actionable treatment advice.

### 4.1.5 Test Cases

Id	Description	Weight
AISCAN-TC-002	Diagnose photo from clear leaf photo.	High
AISCAN-TC-003	AI returns a different disease from the real disease of the plant.	High
AISCAN-TC-004	AI recommendation status consistently labels every plant as 'apple leave'.	High

## 4.2 Ft Weather Tips

### 4.2.1 Priority

Must Have

### 4.2.2 User Story

As a farmer growing maize, I want the weather monitoring section to show me tips about maize, not a generic crop.

### 4.2.3 Preconditions

User has registered a farm with 'Maize' as the crop.

### 4.2.4 Postconditions

All weather-related tips and advice in the monitoring section are specific to maize.

### 4.2.5 Test Cases

Id	Description	Weight
WEATHER-TC-001	In monitoring button, every weather condition tip is about tomato plant instead of a crop in the farm.	High

## 4.3 Ft Task Recur

### 4.3.1 Priority

Must Have

### 4.3.2 User Story

As a farmer, I want to create a recurring task for weekly weeding so that it automatically appears in my task list each week.

### 4.3.3 Preconditions

User is on the 'New Task' screen.

### 4.3.4 Postconditions

The task is saved with a visible recurrence icon, and the next instance of the task is auto-generated for the following week.

### 4.3.5 Test Cases

Id	Description	Weight
TASK-TC-002	Create a recurring weekly task.	High

## 4.4 Ft Task Remind

### 4.4.1 Priority

Must Have

### 4.4.2 User Story

As a farmer, I want to receive a push notification 30 minutes before a task is due so I don't forget to do it.

### 4.4.3 Preconditions

User has a task with a reminder set for 30 minutes prior. Notifications are enabled for the app.

### 4.4.4 Postconditions

A push notification arrives at the correct time with the task title.

### 4.4.5 Test Cases

Id	Description	Weight
TASK-TC-003	Set and wait for a reminder notification.	High

# 5 Technical Requirements

## 5.1 Performance Standards

Requirement	Target	How To Test
App load	≤ 3s	Stopwatch on target devices
AI Scan processing time	≤ 5s from photo capture to diagnosis display	Time the interaction on target devices with a stable connection.
AI Model Accuracy	> 90% for supported crops and diseases	Validate against a labeled test dataset of plant images.

## 5.2 Platform Requirements

Platform	Minimum Version	Target Version	Notes
Android	API 28 (Android 9)	API 34+	Testing was performed on a Samsung Galaxy A32.
iOS	iOS 14	iOS 17+	Testing was performed on an iPhone 13.

## 5.3 Security Privacy

Requirement	Must Have	Implementation
User data encryption	True	AES-256 at rest; TLS 1.2+ in transit
Distinct Legal Policies	True	The Privacy Policy and Terms of Use must contain separate and appropriate content.

# 6 External Dependencies

## 6.1 Third Party Services

Service	What It Does	Criticality	Backup Plan
Weather API Provider	Provides real-time and forecast weather data.	Critical	Have a secondary weather API provider for failover.
AI/ML Model Host	Hosts and serves the plant disease diagnosis model.	Critical	Ensure redundant server instances and robust monitoring.

## 6.2 Device Requirements

Feature	Required	Optional	Notes
Camera	True	False	Essential for AI Scan plant diagnosis feature.
GPS/Location	True	False	Required for farm setup and localized weather forecasts.

# 7 Release Planning

## 7.1 Development Phases

Phase	Features Included	Timeline	Success Criteria
Phase 1 (Critical Bug Fixes & Reliability)	['FT-AISCAN-DIAGNOSE (Model retraining and logic fix)', 'FT-WEATHER-TIPS (Contextual logic implementation)', 'FT-TASK-RECUR (UI fix)', 'FT-TASK-REMIND (Notification service fix)', 'FT-AISCAN-COMPARE (iOS UI fix)', 'FT-UI-LANG-SWITCH (Dashboard/AI screen fix)']	6 weeks	All 'Must' priority features are functional. All key findings from the report are resolved. Overall quality score > 90%.

## 7.2 Release Checklist

- All Must-Haves complete
- No critical bugs remaining
- AI diagnosis model accuracy validated at > 90%
- Contextual advice for at least 5 major crop types is verified
- Task and reminder system is fully functional and tested
- Privacy Policy and Terms of Use have been updated with correct, distinct content

# 8 Risks Assumptions

## 8.1 Risks

Risk	Probability	Impact	Mitigation
AI disease diagnosis model remains inaccurate, leading to farmers making incorrect decisions and potential crop loss.	High	High	Invest in a more diverse and accurately labeled training dataset. Implement a user feedback loop for incorrect diagnoses. Clearly display confidence scores.
The application's advice is too generic (e.g., 'tomato tips'), causing users to lose trust and abandon the app.	High	High	Develop a robust system for mapping advice to the user's specific registered crop type. Prioritize creating content for the most common crops in the target market.
Failure to fix core productivity features like recurring tasks and reminders makes the app significantly less useful for farm management.	Medium	Medium	Allocate dedicated development time to fixing the task management module as a priority.

## 8.2 Assumptions

- Users have smartphones with sufficient camera quality for clear leaf images.
- Users have intermittent or stable internet access for features requiring online processing (AI Scan, Weather).

- The target user base is comfortable with a mobile-first, app-based solution for farm management.



# 9 Market Specific Considerations

## 9.1 Primary Market

- East Africa (implied by Swahili language option)

## 9.2 Target Demographics

- Small to medium-scale farmers

## 9.3 Local Considerations

- Must support English and Swahili languages fully.
- The AI model must be trained on diseases and pests common to crops in the target region.
- The app should be optimized for performance on mid-range Android devices common in the market.

## 9.4 Payment Preferences

Preference	Value
Mobile Money	N/A
Cash	N/A
Cards	N/A

## 9.5 Competition

- Other digital agriculture and plant diagnosis applications

# 10 Sign Off

## 10.1 Approval

Role	Name	Signature	Date

## 10.2 Document History

Version	Date	Changes Made	Changed By
0.1	2025-08-07	Initial draft created from SASA SHAMBA testing report.	Gemini System Designer

# 11 Additional Context

## 11.1 Success Metrics

### 11.1.1 Customer Acquisition

10,000 active users within 6 months of relaunch.

### 11.1.2 Partner Signups

N/A

### 11.1.3 Daily Orders

N/A

### 11.1.4 Customer Satisfaction

App store rating of  $\geq 4.5$  stars.

### 11.1.5 Order Success Rate

N/A

### 11.1.6 Average Delivery Time

N/A