

FarmVoice

AI Agent Implementation Plan

Production-Grade Intelligent Farming Assistant

Document Version: 1.0

Date: January 20, 2026

Project: FarmVoice Pro

1. Project Goal

Transform the existing AI Voice Assistant into a production-grade AI Agent called "FarmVoice" that can answer queries, make intelligent suggestions, and perform ALL data operations.

IMPORTANT: This replaces the old voice assistant completely. FarmVoice will have full CRUD permissions on all user data.

2. Key Requirements

- Replaces the old voice assistant completely
- Answers user queries - responds to any farming question
- Makes suggestions - proactive recommendations
- Full CRUD on ALL entities - no restrictions
- High-end, production quality - zero mistakes

3. Architecture Overview

Frontend Layer:

- FarmVoiceAgent Component
- Voice/Text Input
- Response Display
- Action Confirmations

Backend Layer:

- Agent Router (API)
- FarmVoice Core (Intelligence)
- Intent Classifier
- Query Answerer
- Suggestion Engine
- Action Executor
- Memory Manager

Data Layer:

- Supabase Database
- Weather API
- Market API

4. Full Permission Matrix

Entity	Read	Create	Update	Delete
User Profile	Yes	Yes	Yes	Yes
Farmer Profile	Yes	Yes	Yes	Yes
Selected Crops	Yes	Yes	Yes	Yes
Daily Tasks	Yes	Yes	Yes	Yes
Notifications	Yes	Yes	Yes	Yes
Crop Health	Yes	Yes	Yes	Yes
Disease Diagnoses	Yes	Yes	Yes	Yes
Voice Queries	Yes	Yes	Yes	Yes
Crop Recommendations	Yes	Yes	Yes	Yes
Weather Data	Yes	-	-	-
Market Prices	Yes	-	-	-
Agent Memory	Yes	Yes	Yes	Yes
Agent Sessions	Yes	Yes	Yes	Yes

5. Backend Implementation

[NEW] agent_core.py

Main agent intelligence - handles queries, suggestions, actions

[NEW] agent_memory.py

Persistent memory - short-term, working, long-term

[NEW] agent_tools.py

Complete CRUD tools for all entities

[NEW] agent_router.py

REST API endpoints: /api/agent/chat, /suggestions, etc.

[MODIFY] llm_service.py

Enhanced prompts for agent behavior

[MODIFY] main.py

Register new agent router

6. Database Schema Updates

agent_sessions

Tracks conversation sessions

Fields: id, user_id, started_at, last_active, session_context

agent_actions

Audit log for all operations

Fields: id, session_id, action_type, entity_type, result

agent_memory

Persistent user memory

Fields: id, user_id, conversation_history, preferences

7. Frontend Updates

[DELETE] VoiceAssistant.tsx

Old voice assistant will be removed

[NEW] FarmVoiceAgent.tsx

- Voice/text input
- Text-to-speech responses
- Conversation history
- Action confirmations
- Suggestion cards

8. Verification Plan

Automated Tests:

- Intent classification accuracy
- CRUD operation execution
- Memory persistence
- API endpoints
- Error handling

Manual Testing:

Query Answering:

- "What crops are good for monsoon?"
- "How do I treat tomato blight?"
- "What is the weather forecast?"

CRUD Operations:

- "Add corn to my farm" - verify in database
- "Create a task to water plants" - check tasks
- "Update my location" - check profile
- "Remove wheat from crops" - verify deletion

Memory Tests:

- Ask about crop, close, reopen - agent remembers context