



AgricultureIndia.com

CSE 111-5L: Fall 2025

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Main idea

Purpose: Manage and analyze agriculture data across India








Goal: Support farmers, researchers, and advisors in improving crop production, sustainability, and market planning

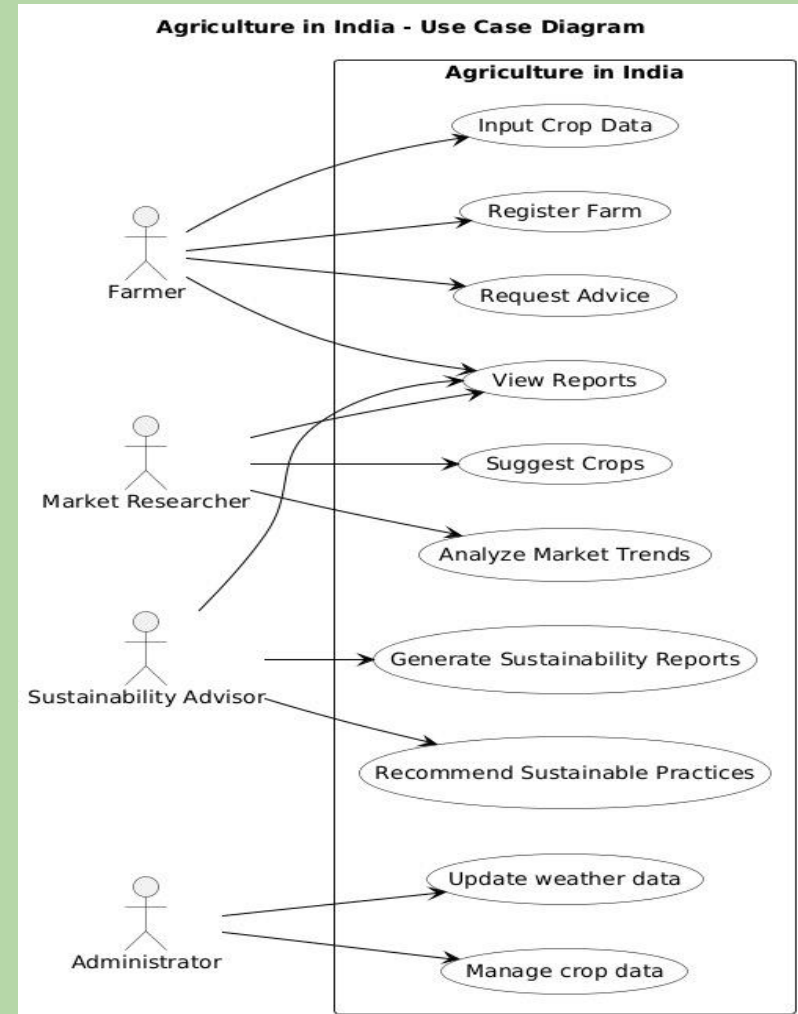
🎯 Key Outcomes

- Supports data-driven planning and decision-making
- Promotes sustainable and eco-friendly farming practices
- Helps forecast market trends and resource needs
- Turns agricultural data into useful, actionable insights

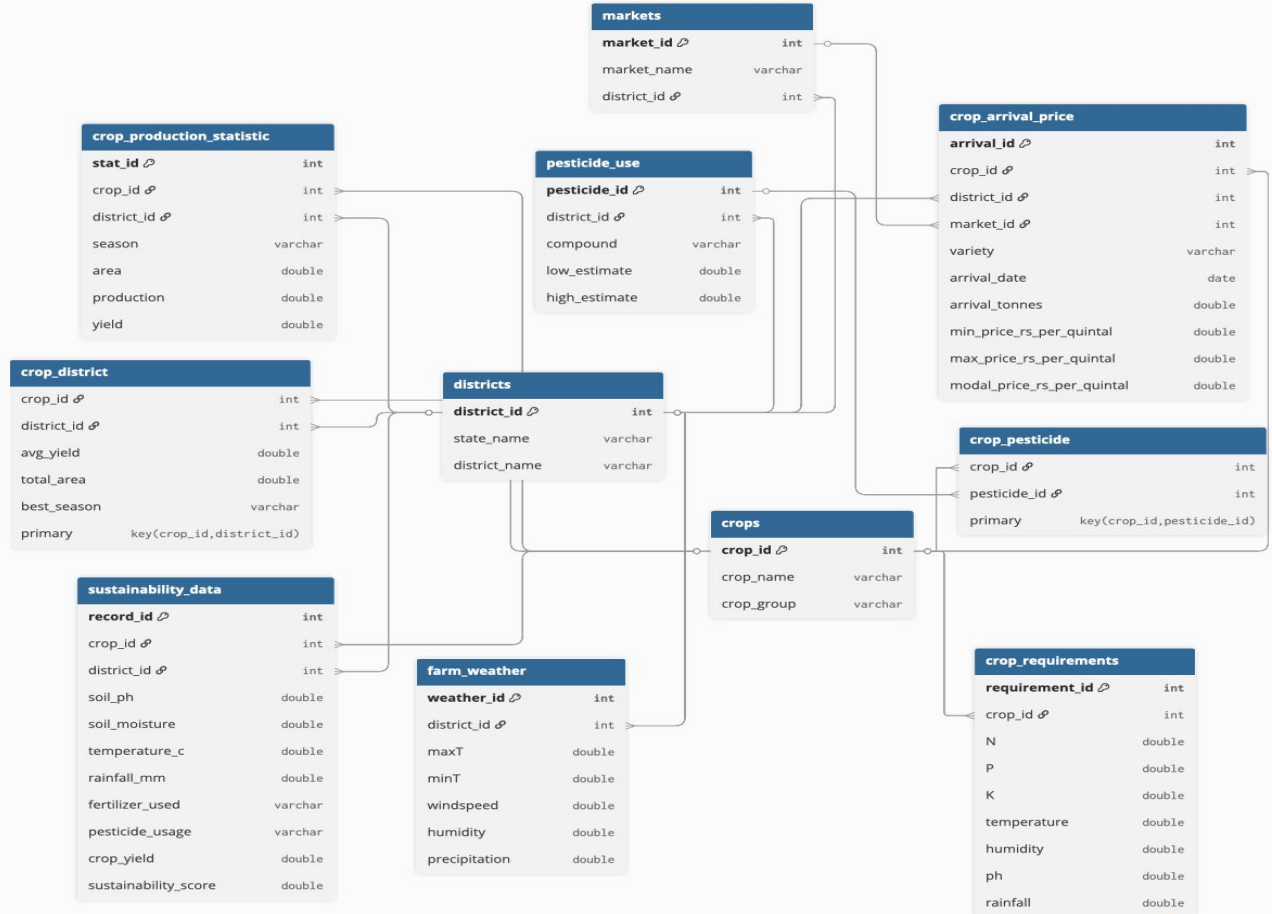


UML use case diagram

-  **1. Analyze Crop Production Trends:** Study changes in crop yields and production over time.
-  **2. Identify Key Drivers of Productivity:** Find what factors (rainfall, soil, fertilizer, technology) affect agricultural output.
-  **3. Assess Climate and Policy Impacts:** Compare how weather conditions or government policies influence crop yields.
-  **4. Support Evidence-Based Decision Making:** Use data to guide resource allocation, planning, and policy development.
-  **5. Research Sustainable Practices:** Explore eco-friendly farming, crop diversification, and long-term soil health.
-  **6. Monitor Fertilizer and Pesticide Usage:** Track input trends across regions to prevent overuse and protect the environment.
-  **7. Forecast Market Prices and Demand:** Predict future crop demand and price fluctuations using historical data.



E/R DIAGRAM



RELATIONAL SCHEMA

Primary key: light blue
Foreign key: light orange

DISTRICTS(district_id, state_name, district_name)

CROPS(crop_id, crop_name, crop_group)

CROP_REQUIREMENTS(requirement_id, crop_id, N, P, K, temperature, humidity, ph, rainfall)

CROP_PRODUCTION_STATISTIC(stat_id, crop_id, district_id, season, area, production, yield)

PESTICIDE_USE(pesticide_id, district_id, compound, low_estimate, high_estimate)

CROP_PESTICIDE(crop_id, pesticide_id)

CROP_DISTRICT(crop_id, district_id, avg_yield, total_area, best_season)

FARM_WEATHER(weather_id, district_id, maxT, minT, windspeed, humidity, precipitation)

SUSTAINABILITY_DATA(record_id, crop_id, district_id, soil_ph, soil_moisture, temperature_c, rainfall_mm, fertilizer_used, pesticide_usage, crop_yield, sustainability_score)

MARKETS(market_id, market_name, district_id)

CROP_ARRIVAL_PRICE(arrival_id, crop_id, district_id, market_id, variety, arrival_date, arrival_tonnes, min_price_rs_per_quintal, max_price_rs_per_quintal, modal_price_rs_per_quintal)

RELATIONSHIP TABLE

| TABLE 1 | RELATIONSHIP | TABLE 2 |
|-----------|--------------|--------------------------|
| Districts | 1:M | Crop_production_satistic |
| Crops | 1:M | Crop_production_satistic |
| Districts | 1:M | Pesticide_use |
| Districts | 1:M | Farm_weather |
| Districts | 1:M | Sustainability_data |
| Crops | 1:M | Sustianability_data |
| Districts | 1:M | Markets |
| Markets | 1:M | Crop_arrival_price |
| Districts | 1:M | Crop_arrival_price |
| Crops | 1:M | Crop_arrival_price |
| Crops | 1:1 | Crop_requirements |
| Crops | M:N | Districts |
| Crops | M:N | Pesticide_use |