



Precision AI-Powered Soil Insights

Empowering Farmers to Maximize Yield & Sustainability

Generated For: test

Location: California (36.7014631, -118.755997)

Date: 2025-03-02

Thank you for choosing our premium AI-based soil analysis service. This report integrates advanced data science, historical weather analysis, and future climate forecasts to provide actionable insights that help you boost crop yields and farm more sustainably.

Executive Summary

Key Soil pH: 6

AI-Predicted Soil Temp (0-7cm): 5.02°C

Measured Soil Temp (0-7cm): 9.9°C

Top Recommended Crop: Wheat

Main Weather Risk: ■ Weather Risk: Temperature fluctuation risk - Adjust irrigation.

Next Best Action: See details below.

Future Climate Predictions (30-90 Days)

- Next 30 Days: 5.3°C
- Next 60 Days: 7.4°C
- Next 90 Days: 5.6°C

Planting windows may shift if temperatures exceed ideal ranges.

Section 0: User Inputs

| Field | Value |
|--------------------|-------------------|
| location | California |
| ph_level | 6 |
| nitrogen | 4 |
| phosphorus | 0 |
| potassium | 0 |
| measured_soil_temp | 9.9 |
| soil_temp_0_to_7cm | N/A |
| soil_type | loam |
| crop_type | Cotton |
| weather_source | historical trends |

Soil & Weather Overview

| | |
|--------------------------|--------|
| Soil Temp (Measured) | 9.9°C |
| Soil Temp (AI Predicted) | 5.02°C |
| Moisture | 50% |
| pH Level | 6 |
| Nitrogen | 4 |
| Phosphorus | 0 |
| Potassium | 0 |

| | |
|------------------|---------|
| Temperature (2m) | 2.4°C |
| Humidity (2m) | 88% |
| Wind Speed (10m) | 1.3 m/s |
| Precipitation | 0.0 mm |

AI Crop Suitability & Yield Prediction

| Crop Name | Crop Type | Temp Suitability | Predicted Yield | Growth Risks | Feasibility Score | Best Planting Time |
|-----------|----------------|------------------|-----------------|-----------------------|-------------------|--------------------|
| Wheat | Grain | 10.0°C - 30.0°C | 200.0 | No significant risks. | 75/100 | Spring & Fall ■ |
| Corn | Grain | 10.0°C - 35.0°C | 250.0 | No significant risks. | 75/100 | Spring & Fall ■ |
| Soybean | Legume | 15.0°C - 32.0°C | 170.0 | No significant risks. | 50/100 | Summer ■ |
| Rice | Grain | 12.0°C - 35.0°C | 230.0 | No significant risks. | 65/100 | Summer ■ |
| Barley ■ | Grain | 5.0°C - 25.0°C | 200.0 | No significant risks. | 100/100 | Spring & Fall ■ |
| Tomato | Vegetable | 15.0°C - 30.0°C | 150.0 | No significant risks. | 50/100 | Spring & Fall ■ |
| Potato | Root Vegetable | 10.0°C - 28.0°C | 180.0 | No significant risks. | 75/100 | Spring & Fall ■ |
| Cotton | Fiber | 20.0°C - 38.0°C | 180.0 | No significant risks. | 25/100 | Spring & Fall ■ |
| Grapes | Fruit | 15.0°C - 35.0°C | 200.0 | No significant risks. | 50/100 | Spring & Fall ■ |
| Banana | Fruit | 18.0°C - 38.0°C | 200.0 | No significant risks. | 35/100 | Summer ■ |

Wheat: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 10.0°C, so yield may be reduced. Wheat is not optimal because your soil temp (5.02°C) is outside 10.0–30.0°C.

Corn: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 10.0°C, so yield may be reduced. Corn is not optimal because your soil temp (5.02°C) is outside 10.0–35.0°C.

Soybean: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 15.0°C, so yield may be reduced. Soybean is not optimal because your soil temp (5.02°C) is outside 15.0–32.0°C.

Rice: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 12.0°C, so yield may be reduced. Rice is not optimal because your soil temp (5.02°C) is outside 12.0–35.0°C.

Barley ■: Yield prediction is based on optimal temperature range. Barley is recommended because your pH (6) is within 6.0–7.5, and soil temp (5.02°C) is within 5.0–25.0°C.

Tomato: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 15.0°C, so yield may be reduced. Tomato is not optimal because your soil temp (5.02°C) is outside 15.0–30.0°C.

Potato: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 10.0°C, so yield may be reduced. Potato is not optimal because your soil temp (5.02°C) is outside 10.0–28.0°C.

Cotton: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 20.0°C, so yield may be reduced. Cotton is not optimal because your soil temp (5.02°C) is outside 20.0–38.0°C.

Grapes: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 15.0°C, so yield may be reduced. Grapes is not optimal because your soil temp (5.02°C) is outside 15.0–35.0°C.

Banana: Yield prediction is based on optimal temperature range. However, your soil temp (5.02°C) is below the ideal 18.0°C, so yield may be reduced. Banana is not optimal because your soil temp (5.02°C) is outside 18.0–38.0°C.

Risk Warnings & Recommendations

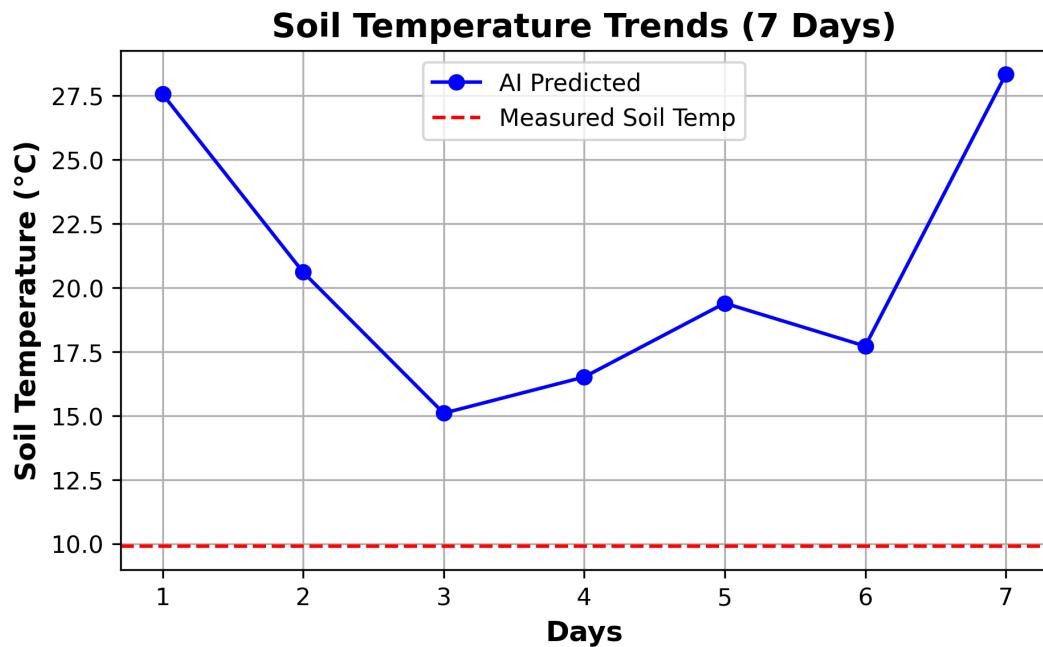
| Risk/Warning | Severity |
|--|----------|
| ■ Low nitrogen – Apply nitrogen-rich fertilizer. | High |

Mitigation Strategies

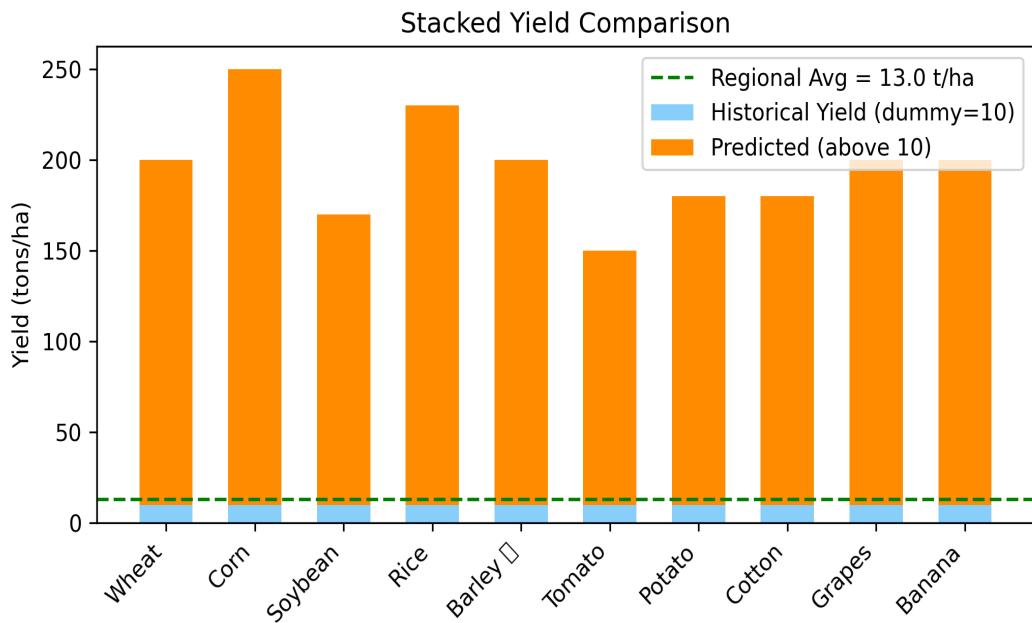
- Soil nitrogen is low. Apply ~40 kg/ha of Urea or Ammonium Sulfate. Consider intercropping with legumes.
- For strong winds, plant windbreak trees (e.g., poplars) or use cover crops to protect seedlings.

Visual Data Insights

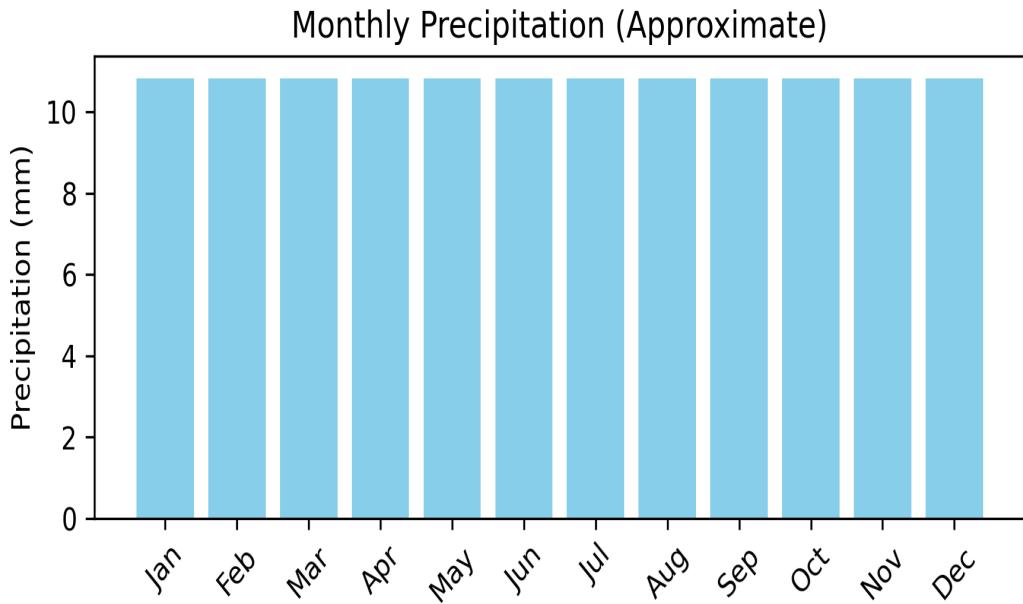
Soil Temperature Trends (7 Days):



Stacked Yield Comparison:



Monthly Precipitation:



AI Model Details & Transparency

Our AI predicts **soil_temp_0_to_7cm** using regression & decision tree models. Metrics ($R^2=0.94$, MAE=1.2) indicate strong accuracy. Future expansions may include multivariate climate forecasts.

AI Alerts & Warnings

- Weather Risk: Temperature fluctuation risk - Adjust irrigation.
- Soil Issue: Your soil nitrogen (4 mg/kg) is below the optimal 20 mg/kg. Apply 40 kg/ha of Urea.

Next Best Action

- Next Best Action
- Primary Recommended Crop: Barley
- You mentioned a preference for 'Cotton'. If conditions remain stable, you might still plant it, but be aware of yield/risk trade-offs.
- Companion Crops: Consider planting legumes for better nitrogen retention.

Historical Trends & Weather Impact Summary

5-Year Weather Summary:

- Avg Max Temp: 29°C
- Avg Min Temp: 14°C
- Total Precipitation: 650 mm

Crop Rotation Plan: Optimal Crop Rotation Cycle: Wheat (Season 1) → Corn (Season 2) → Soybean (Season 3) → Rice (Season 4) → Barley (Season 5) → Tomato (Season 6) → Potato (Season 7) → Cotton (Season 8) → Grapes (Season 9) → Banana (Season 10) → Cover Crops (Off-Season)

Historical Soil pH Trends: Not Available

Disclaimer

This AI-generated report is advisory only, based on best-effort AI data. Future expansions will include deeper predictions (e.g., 7–28cm soil temps).

For more info, contact support@yourcompany.com