



# Precision AI-Powered Soil Insights

*Empowering Farmers to Maximize Yield & Sustainability*

**Generated For:** Adl

**Location:** New York, USA (40.7127281, -74.0060152)

**Date:** 2025-03-01

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:** 6.5

**AI-Predicted Soil Temp (0-7cm):** 5.17°C

**Measured Soil Temp (0-7cm):** 18.5°C

**Top Recommended Crop:** Corn

**Main Weather Risk:** ■ Weather Risk: Strong winds detected - Consider windbreaks.

**Next Best Action:** See details below.

## Future Climate Predictions (30-90 Days)

- Next 30 Days: 5.4°C
- Next 60 Days: 6.5°C
- Next 90 Days: 7.8°C

Planting windows may shift if temperatures exceed ideal ranges.

## Section 0: User Inputs

Field	Value
location	New York, USA
ph_level	6.5
nitrogen	N/A
phosphorus	N/A
potassium	N/A
measured_soil_temp	18.5
soil_temp_0_to_7cm	18.5
soil_type	sandy
crop_type	corn
weather_source	real-time

## Soil & Weather Overview

Soil Temp (Measured)	18.5°C
Soil Temp (AI Predicted)	5.17°C
Moisture	45%
pH Level	6.5
Nitrogen	N/A
Phosphorus	N/A
Potassium	N/A

Temperature (2m)	6.1°C
Humidity (2m)	53%
Wind Speed (10m)	18.4 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
Corn	Grain	10.0°C - 35.0°C	250.0	No significant risks.	75/100	Spring & Fall ■■
Tomato	Vegetable	15.0°C - 30.0°C	150.0	No significant risks.	50/100	Spring & Fall ■■
Carrot ■■	Root Vegetable	5.0°C - 25.0°C	200.0	No significant risks.	100/100	Spring & Fall ■■
Potato	Root Vegetable	10.0°C - 28.0°C	180.0	No significant risks.	75/100	Spring & Fall ■■
Peanut	Legume	15.0°C - 35.0°C	200.0	No significant risks.	50/100	Spring & Fall ■■
Cotton	Fiber	20.0°C - 38.0°C	180.0	No significant risks.	25/100	Spring & Fall ■■

**Corn:** Yield prediction is based on optimal temperature range. However, your soil temp (5.17°C) is below the ideal 10.0°C, so yield may be reduced. Corn is not optimal because your soil temp (5.17°C) is outside 10.0–35.0°C.

**Tomato:** Yield prediction is based on optimal temperature range. However, your soil temp (5.17°C) is below the ideal 15.0°C, so yield may be reduced. Tomato is not optimal because your soil temp (5.17°C) is outside 15.0–30.0°C.

**Carrot ■■:** Yield prediction is based on optimal temperature range. Carrot is recommended because your pH (6.5) is within 5.8–7.0, and soil temp (5.17°C) is within 5.0–25.0°C.

**Potato:** Yield prediction is based on optimal temperature range. However, your soil temp (5.17°C) is below the ideal 10.0°C, so yield may be reduced. Potato is not optimal because your soil temp (5.17°C) is outside 10.0–28.0°C.

**Peanut:** Yield prediction is based on optimal temperature range. However, your soil temp (5.17°C) is below the ideal 15.0°C, so yield may be reduced. Peanut is not optimal because your soil temp (5.17°C) is outside 15.0–35.0°C.

**Cotton:** Yield prediction is based on optimal temperature range. However, your soil temp (5.17°C) is below the ideal 20.0°C, so yield may be reduced. Cotton is not optimal because your soil temp (5.17°C) is outside 20.0–38.0°C.

## Risk Warnings & Recommendations

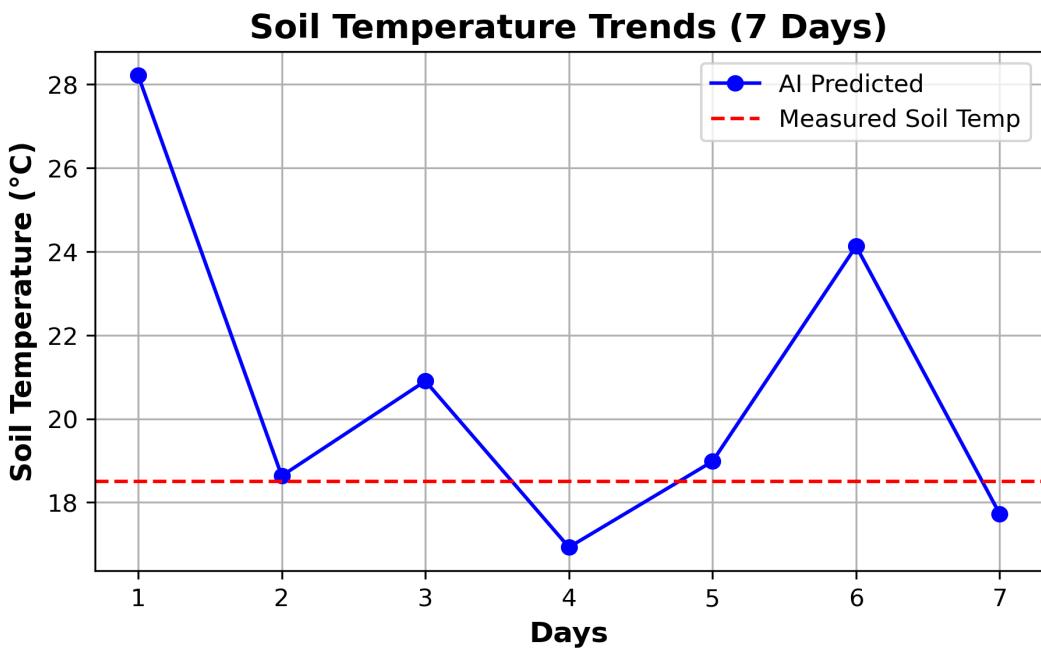
Risk/Warning	Severity
No major soil risks detected.	None

## Mitigation Strategies

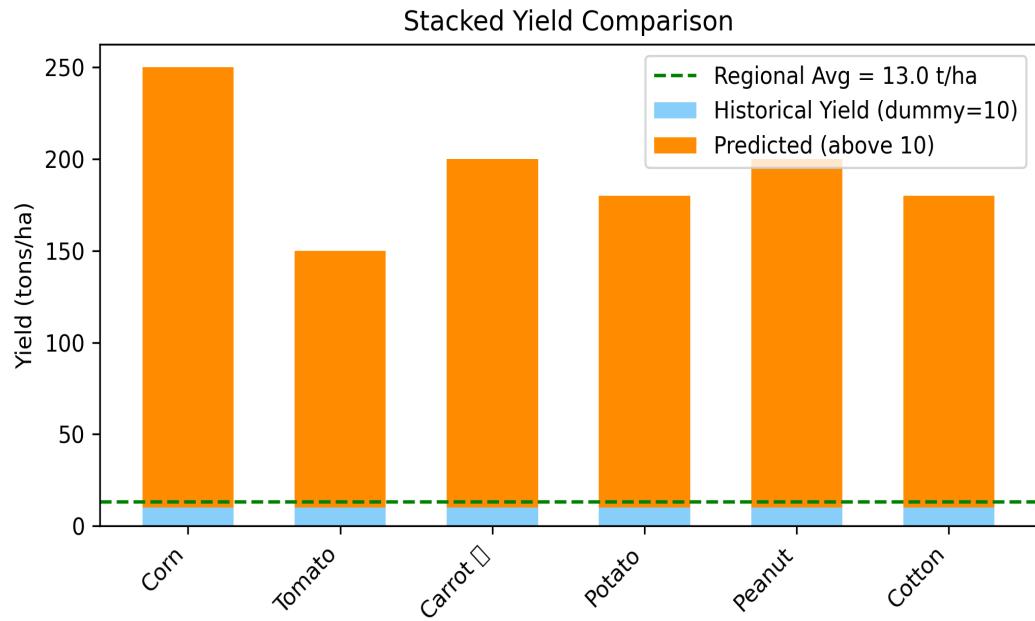
- For strong winds, plant windbreak trees (e.g., poplars) or use cover crops to protect seedlings.

## Visual Data Insights

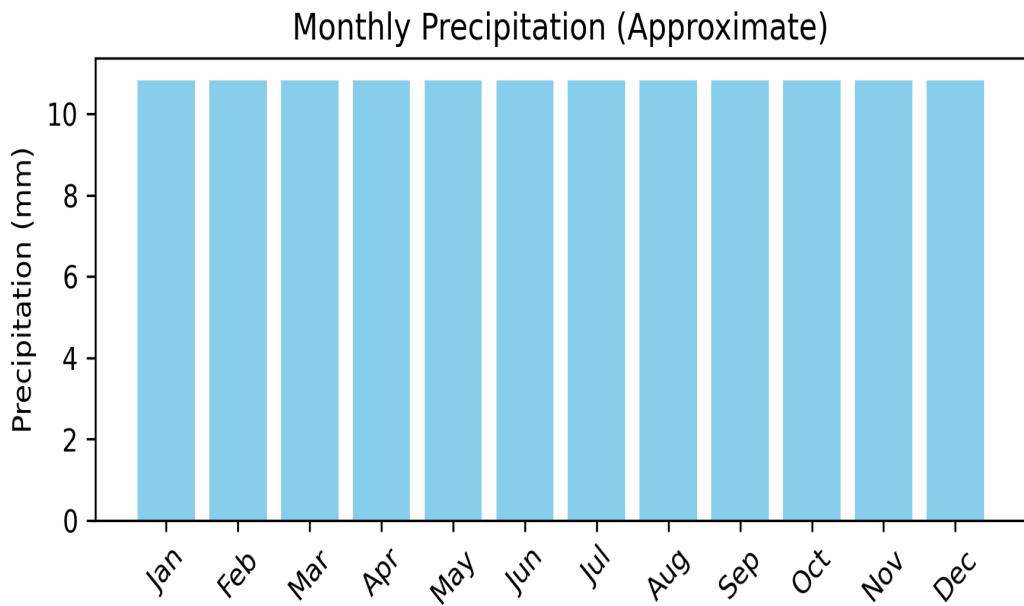
### Soil Temperature Trends (7 Days):



#### 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: Strong winds detected - Consider windbreaks.
- Weather Risk: Temperature fluctuation risk - Adjust irrigation.

## Next Best Action

- Next Best Action
- Primary Recommended Crop: Carrot
- Corn may not thrive because Corn prefers 12–30°C, but your soil is 5.17°C.
- Note: Corn is a warm-season crop. Our 60-day forecast is 6.5°C, which may be too cold. You might wait until ~90 days when temp is higher.
- 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: Corn (Season 1) → Tomato (Season 2) → Carrot (Season 3) → Potato (Season 4) → Peanut (Season 5) → Cotton (Season 6) → 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