Objective: To evaluate the performance of a machine learning model in predicting prices for various crops using an extended dataset.

Dataset:

The dataset includes:

- ➢ Crop
- ➢ Date
- ➢ Real-Time Price (Actual Price)
- ➢ Prediction (Predicted Price)
- ➢ Deviation (Difference between Real-Time and Prediction)
- ➢ %Accuracy (Accuracy of the Prediction)

Data Overview:

The dataset covers dates for each crop with corresponding real-time and predicted prices. Data spans from 04/03/2024 to 13/03/2024 for corn, cotton, tomato, onion, and paddy, with potato data extending to 27/04/2024.

Analysis Approach:

1. **Accuracy Calculation**:

$$\text{Accuracy (\%)} = \left(1 - \frac{\text{Deviation}}{\text{Real-Time Price}}\right) \times 100$$

   - o
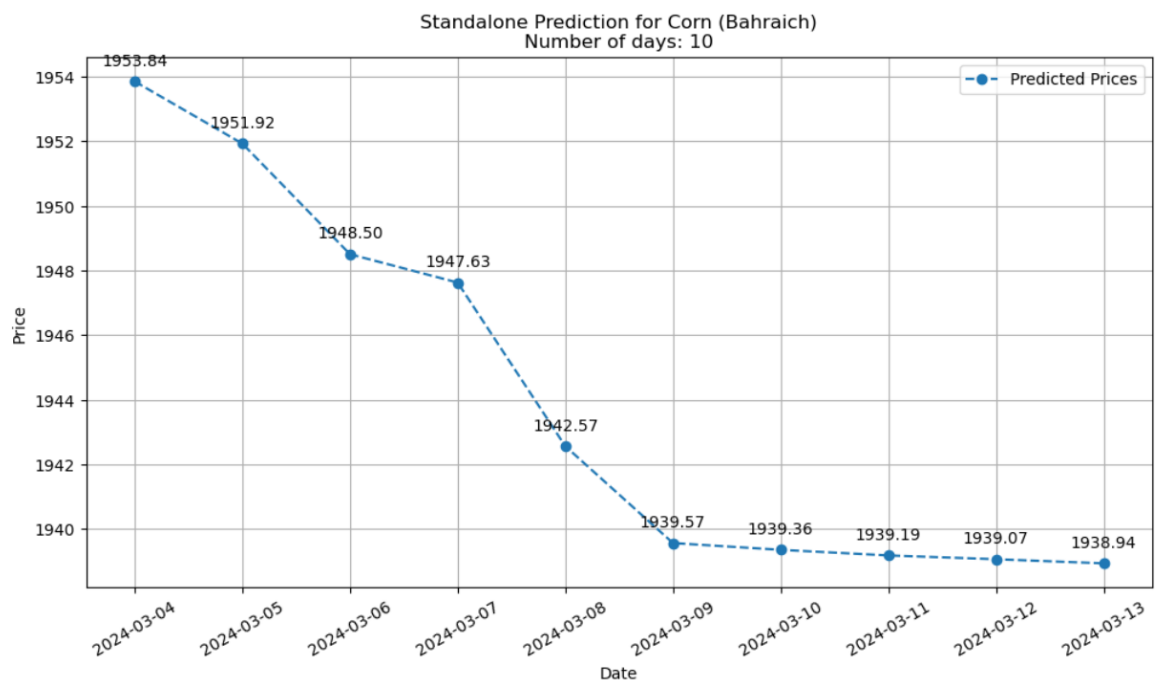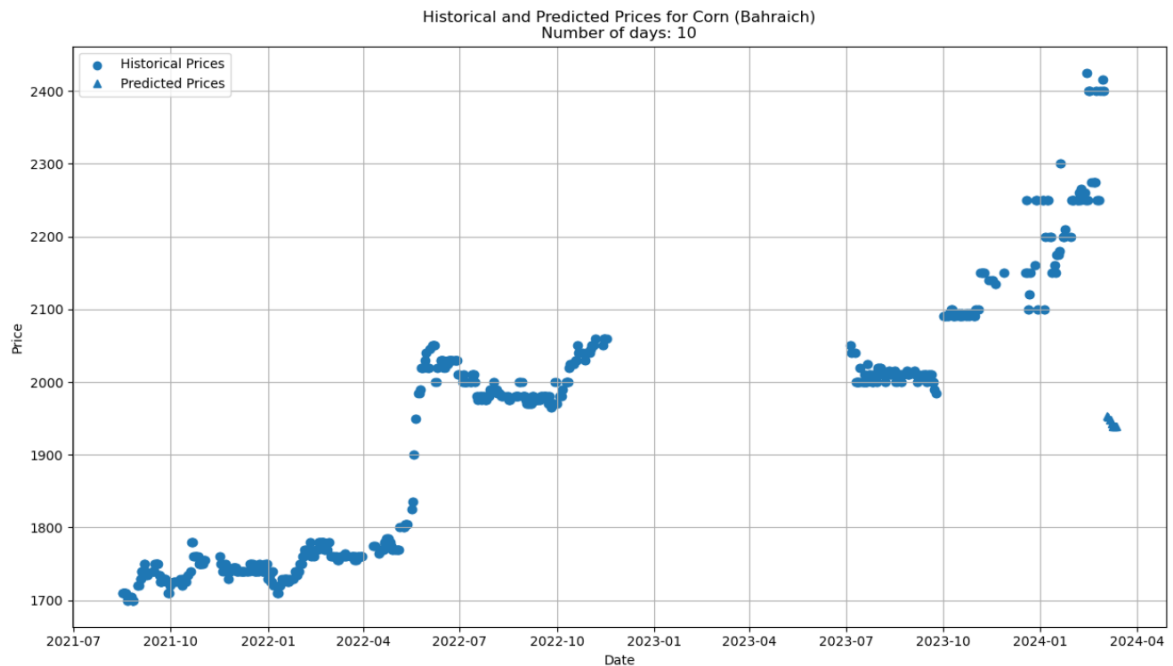   - o Deviation and accuracy are computed for each crop and date.
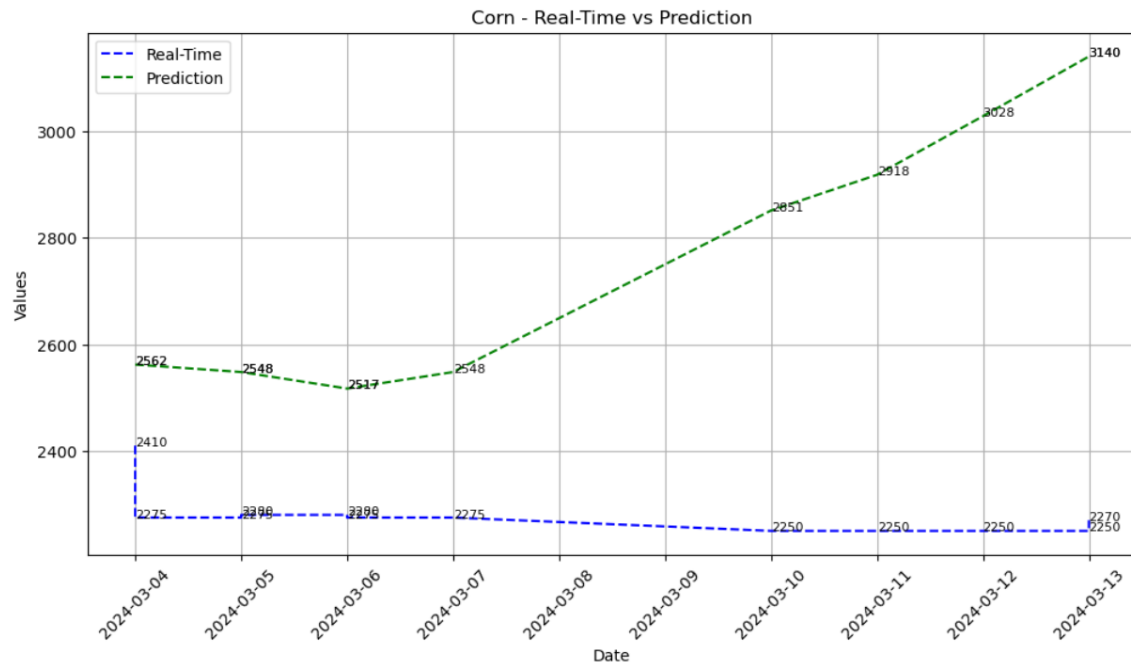2. **Descriptive Statistics**:
   - o Average real-time price, predicted price, deviation, and accuracy percentage are calculated for each crop.
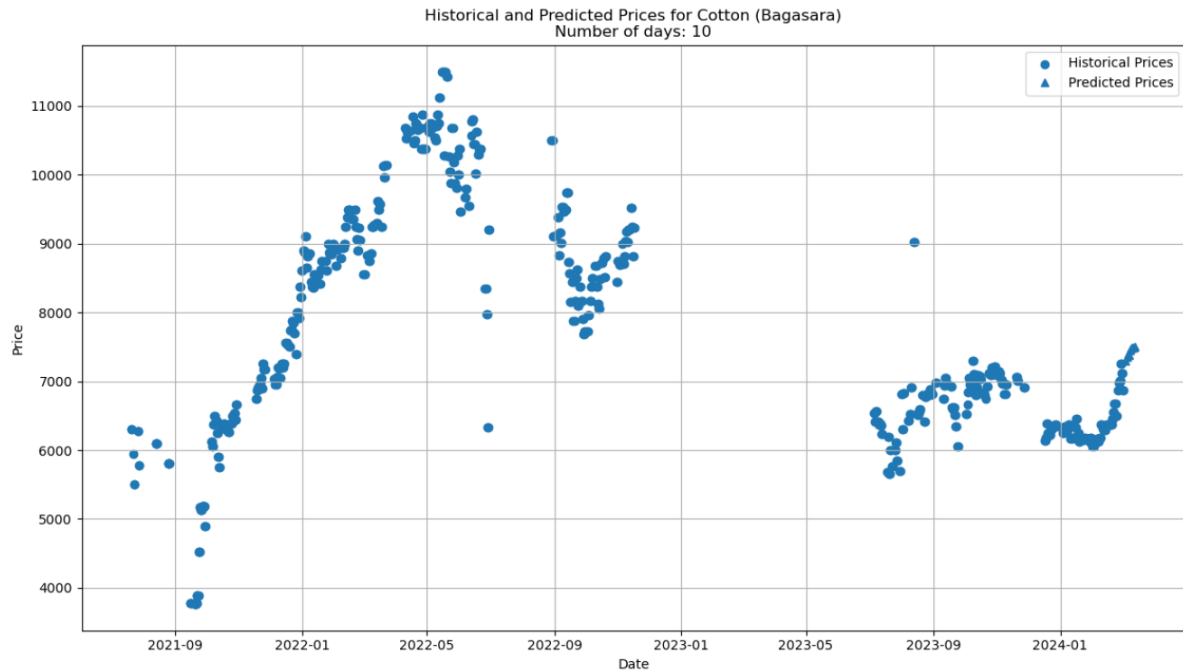
Key Findings and Output:

1. **Corn**:
   o Average Real-Time Price: 2278.33
   o Average Predicted Price: 2740.333
   o Average Deviation: 461.9998
   o Average Accuracy: 79.722026%

Historical and Predicted Prices for Corn (Bahraich)
Number of days: 10

Standalone Prediction for Corn (Bahraich)
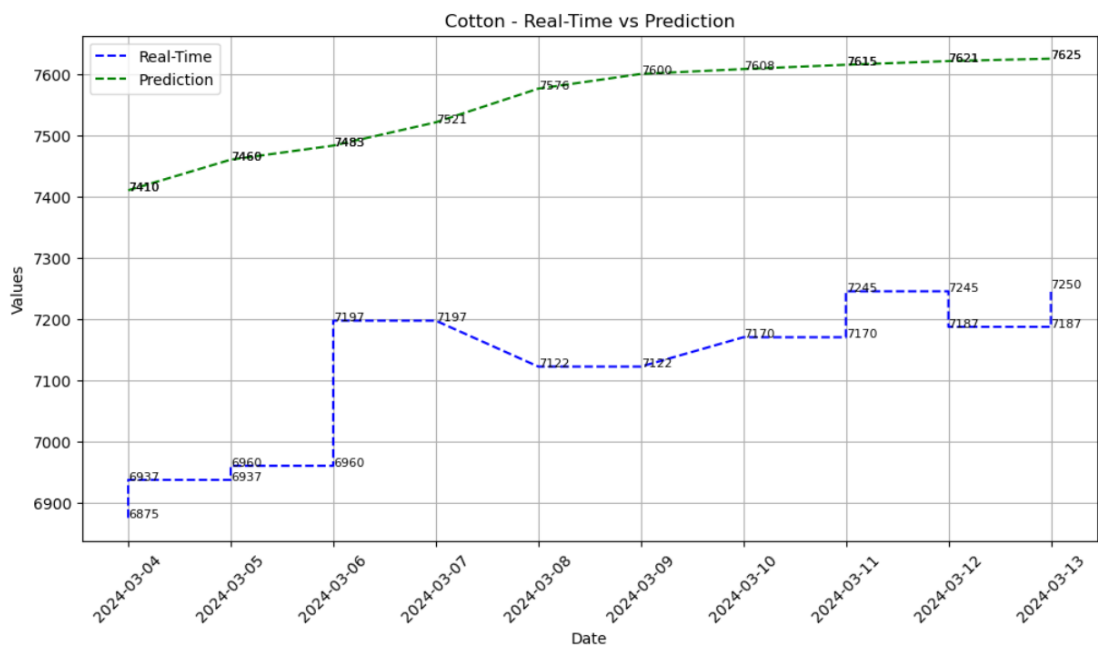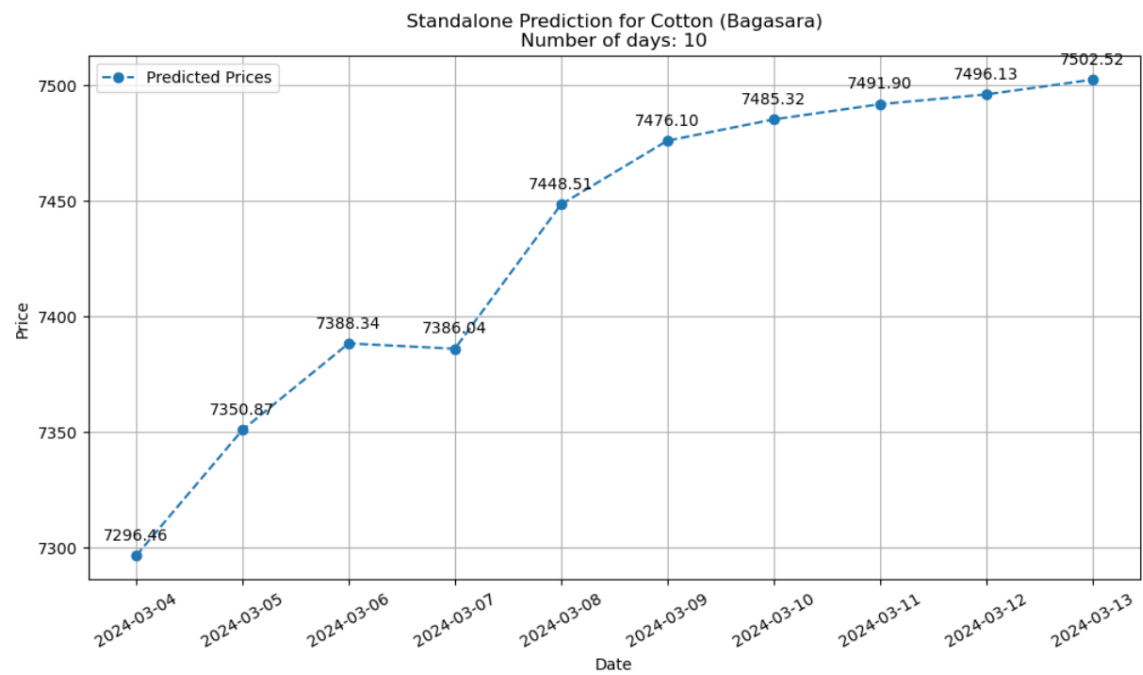Number of days: 10

Corn - Real-Time vs Prediction

2. **Cotton**:
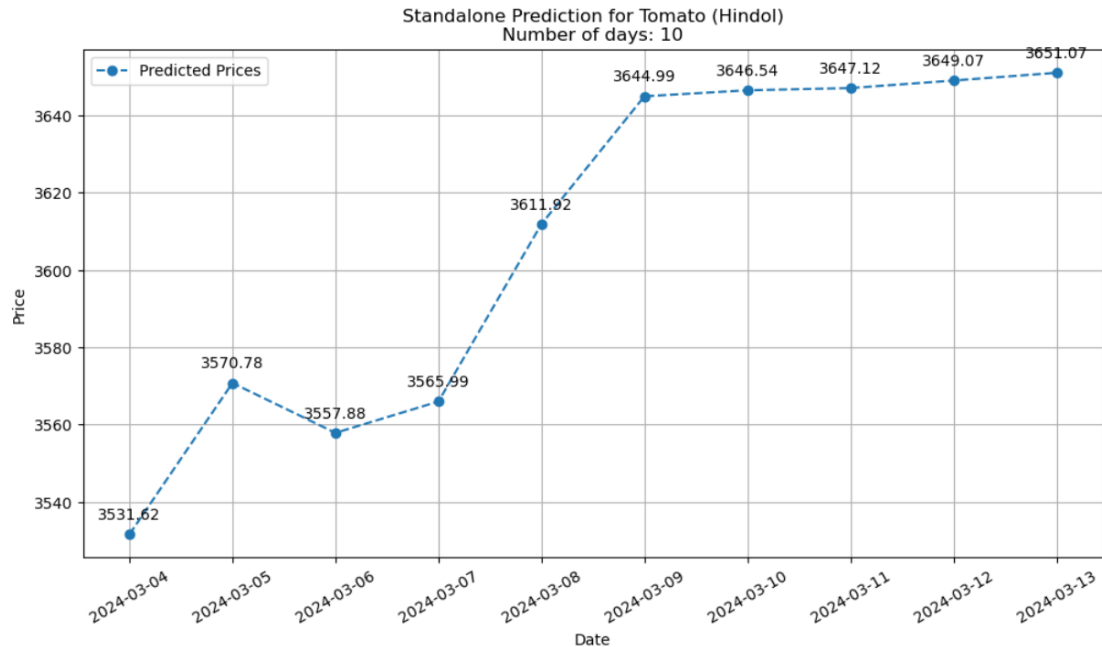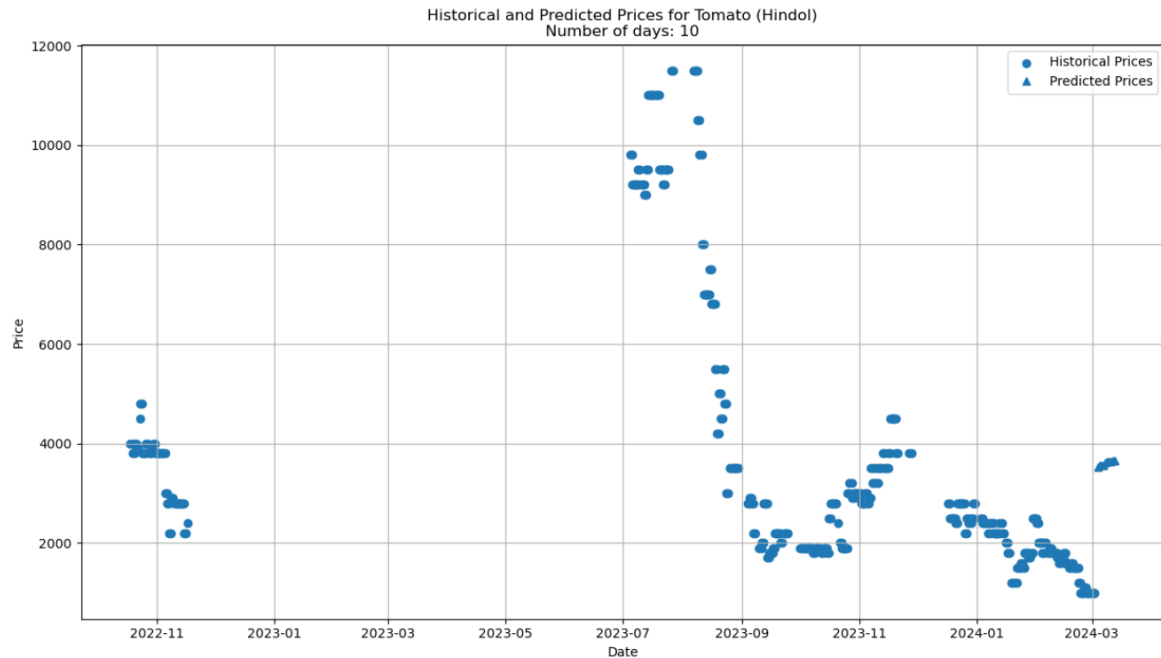   - Average Real-Time Price: 7110.06
   - Average Predicted Price: 7546.396
   - Average Deviation: 436.3333
   - Average Accuracy: 93.863158%
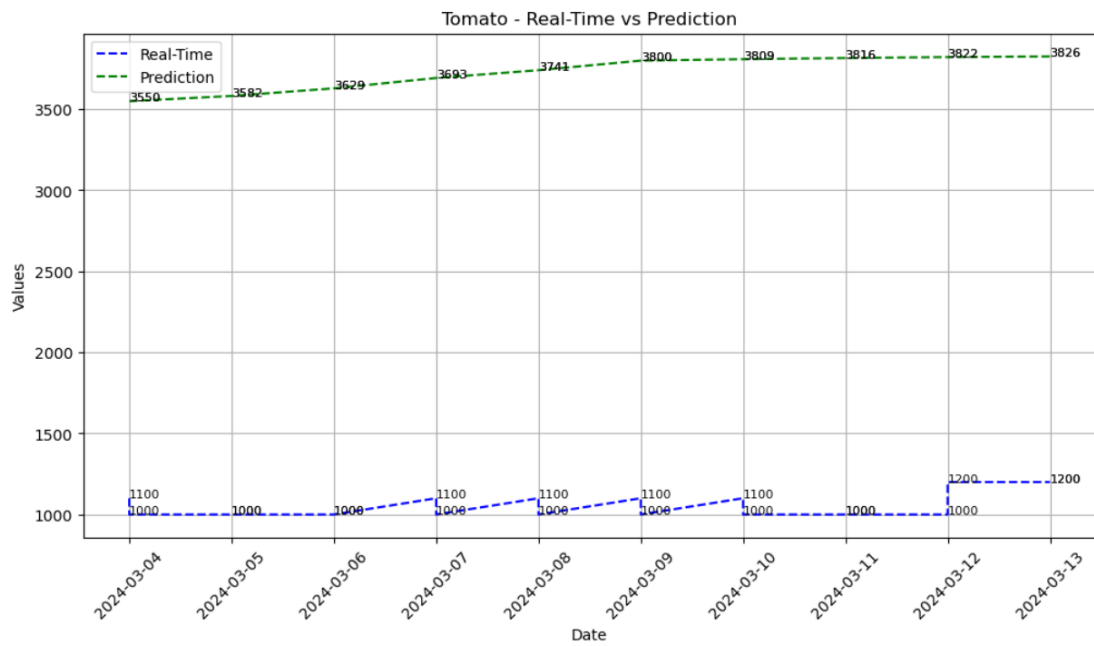

Historical and Predicted Prices for Cotton (Bagasara)
Number of days: 10

Standalone Prediction for Cotton (Bagasara)
Number of days: 10

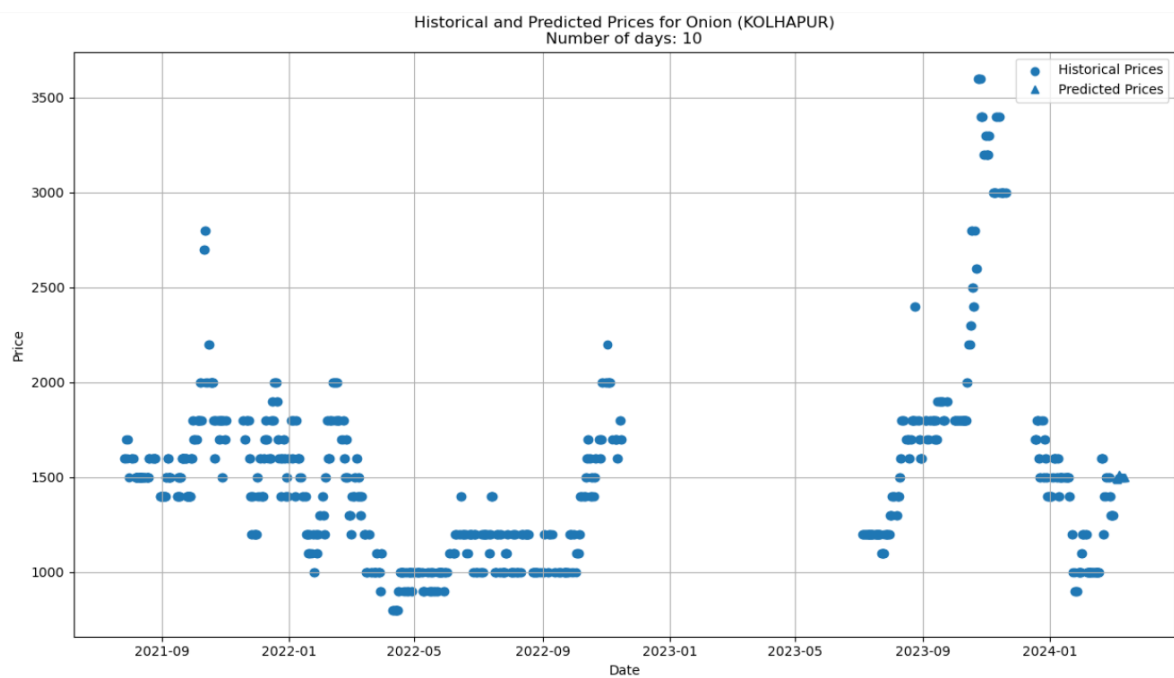Cotton - Real-Time vs Prediction

3. **Tomato**:
   o Average Real-Time Price: 1055.00
   o Average Predicted Price: 3727.289
   o Average Deviation: 2672.289
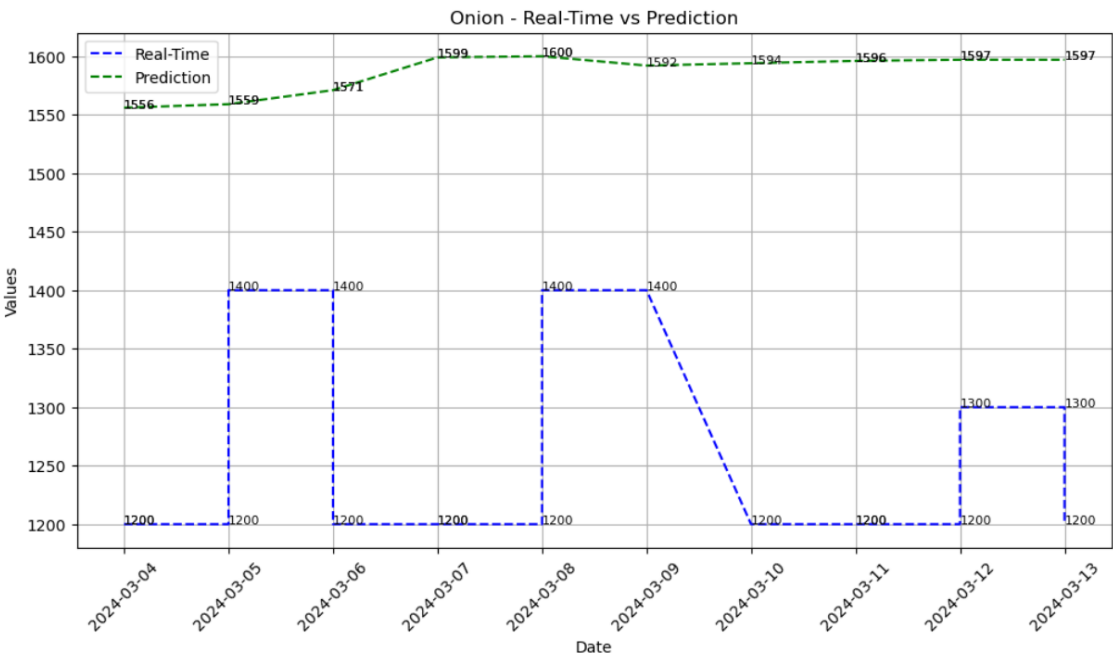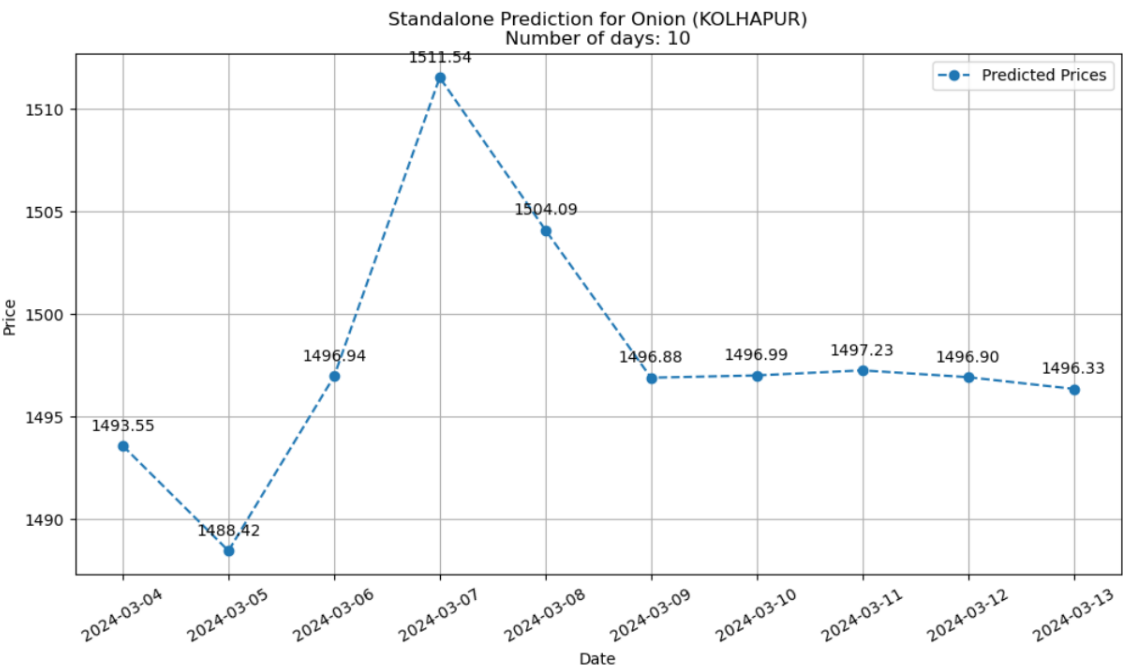   o Average Accuracy: -153.29758% (Poor model performance)

Historical and Predicted Prices for Tomato (Hindol)
Number of days: 10

Standalone Prediction for Tomato (Hindol)
Number of days: 10

Tomato - Real-Time vs Prediction

4. **Onion**:
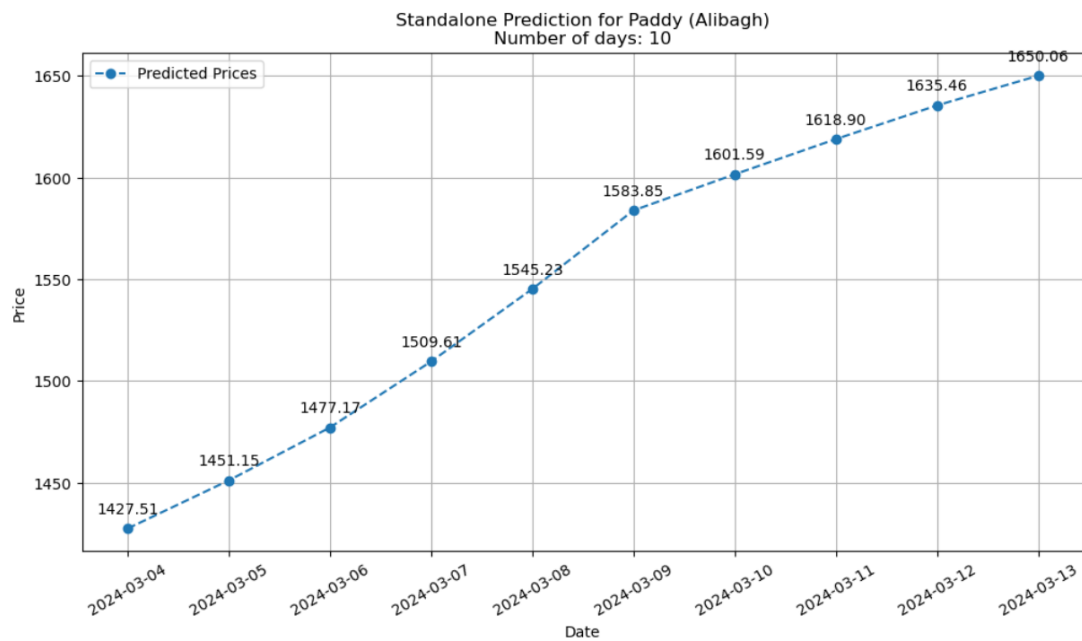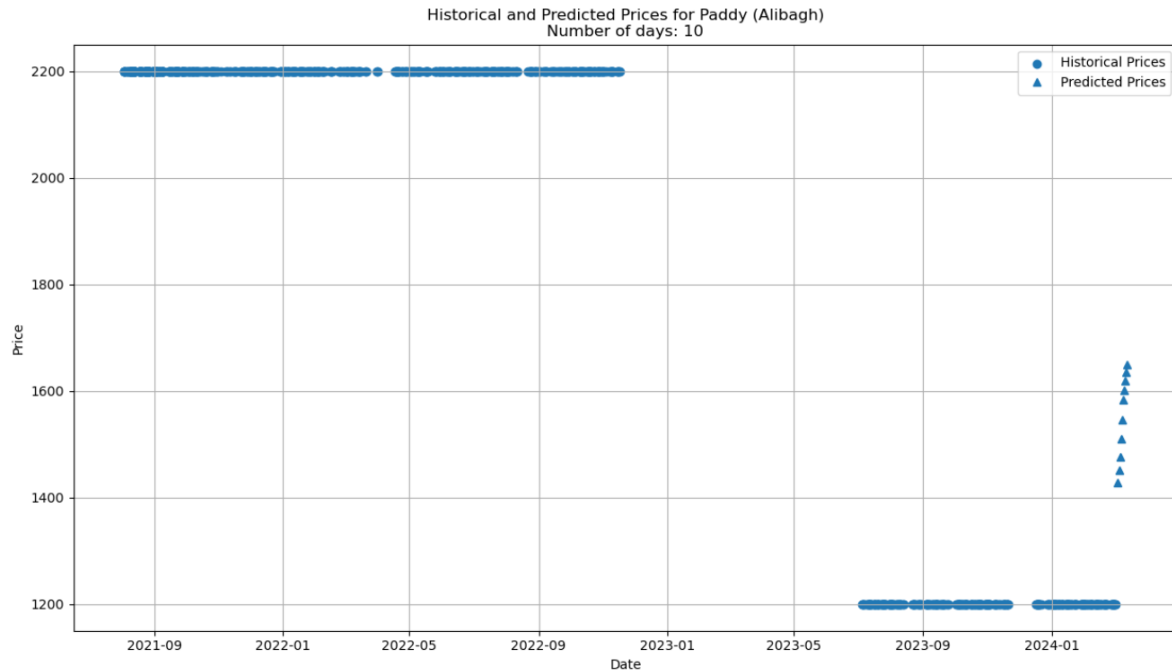   o Average Real-Time Price: 1255.56
   o Average Predicted Price: 1585.812
   o Average Deviation: 330.256
   o Average Accuracy: 73.696427%

Historical and Predicted Prices for Onion (KOLHAPUR)
Number of days: 10

Standalone Prediction for Onion (KOLHAPUR)
Number of days: 10
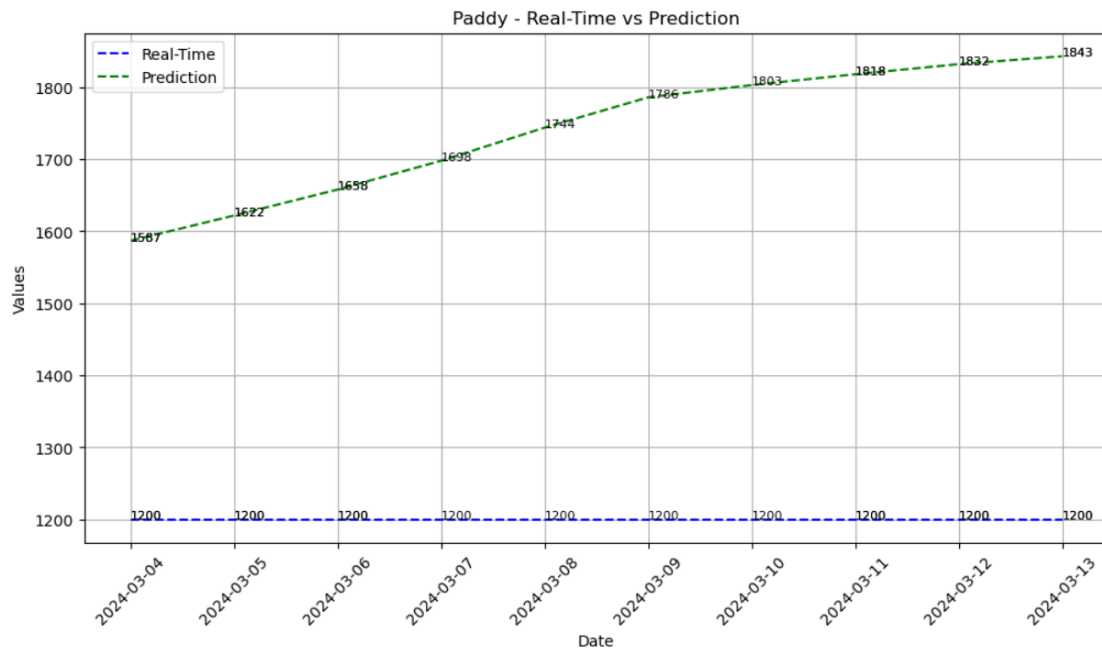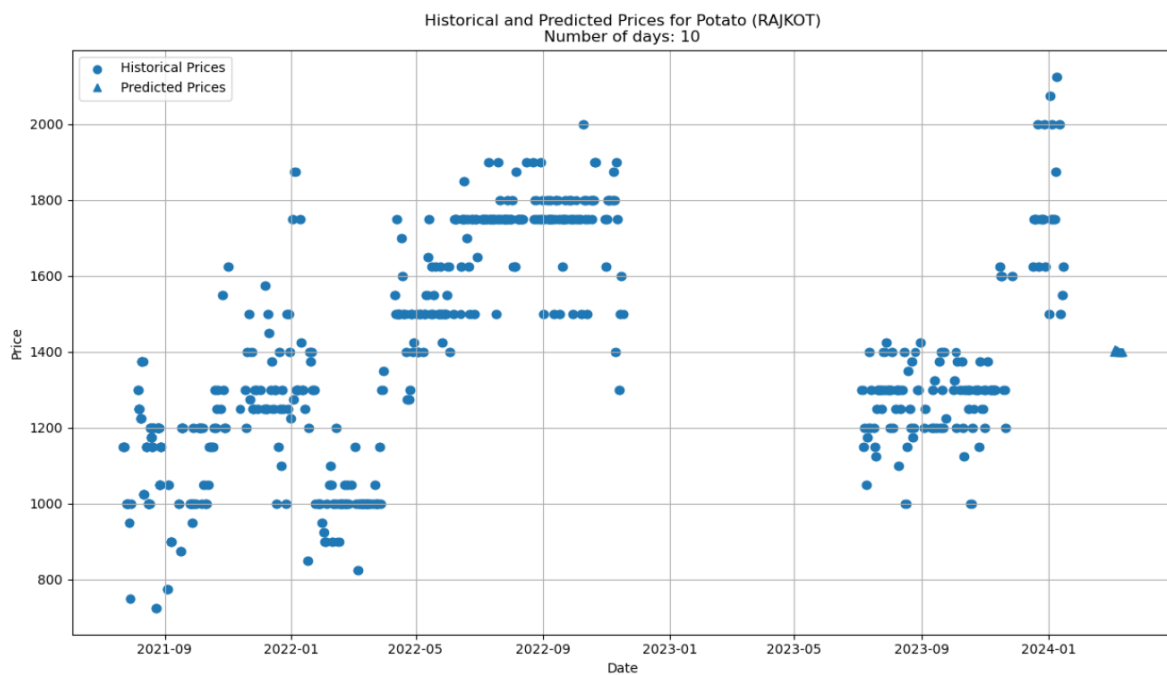

Onion - Real-Time vs Prediction

5. **Paddy**:
   o Average Real-Time Price: 1200.00
   o Average Predicted Price: 1734.947
   o Average Deviation: 534.9474
   o Average Accuracy: 55.421046%

Historical and Predicted Prices for Paddy (Alibagh)
Number of days: 10

Standalone Prediction for Paddy (Alibagh)
Number of days: 10

Paddy - Real-Time vs Prediction
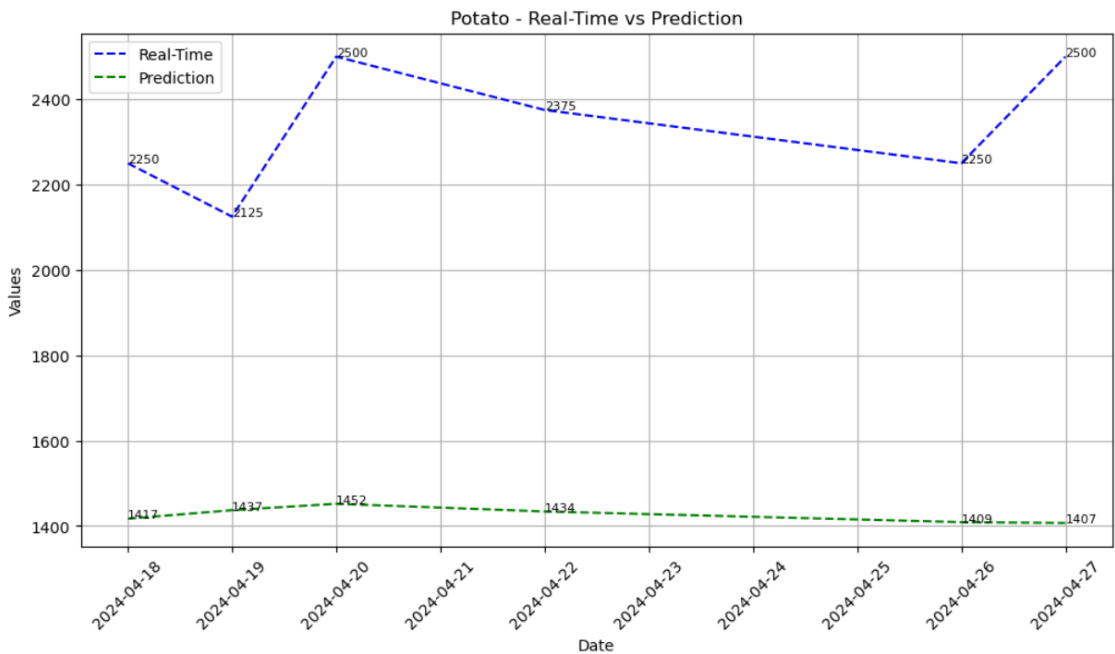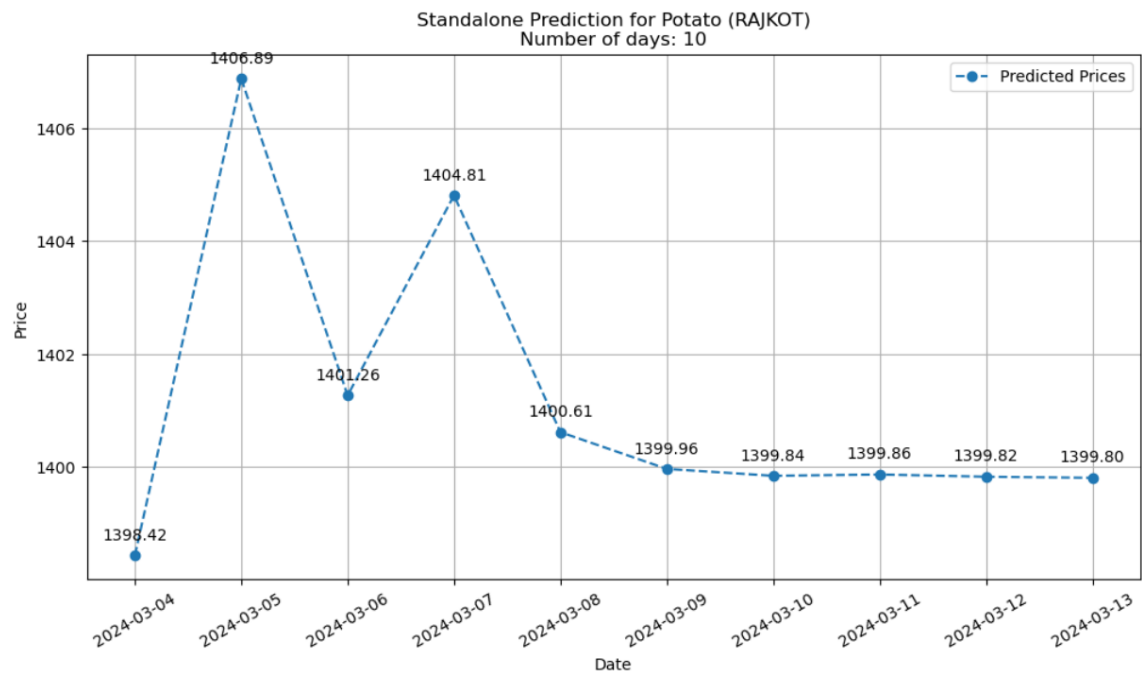
6. **Potato**:
   o Average Real-Time Price: 2333.33
   o Average Predicted Price: 1426.378
   o Average Deviation: 906.9593
   o Average Accuracy: 61.130316%

Historical and Predicted Prices for Potato (RAJKOT)
Number of days: 10

Standalone Prediction for Potato (RAJKOT)
Number of days: 10

Potato - Real-Time vs Prediction

Conclusion:

The model shows high accuracy for predicting cotton , corn , and paddy prices but performs poorly for tomatoes. For onions and potatoes, accuracy is moderate. This analysis highlights the model's strengths and areas for improvement.

Visual Analysis:

The visual representation of the data (image provided) shows detailed predictions and deviations for each crop. The table in the image provides a clear overview of the model's performance across different dates and crops. This can help identify trends and patterns in prediction accuracy and highlight specific areas where the model needs adjustment.

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