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In [1]: import pandas as pd

# Load the avocado dataset
file_path = "E:\\serious\\archive (2)\\avocado.csv"
data = pd.read_csv(file_path)

# Display the first few rows of the dataset to understand its structure
data.head()
import matplotlib.pyplot as plt

# Convert the Date column to datetime format
data['Date'] = pd.to_datetime(data['Date'])

# Filter the data for the 'Albany' region and 'conventional' type
albany_data = data[(data['region'] == 'Albany') & (data['type'] == 'conventional')]

# Set the Date column as the index and resample the data to weekly frequency (W)
albany_data.set_index('Date', inplace=True)
weekly_data = albany_data['Total Volume'].resample('W').sum()

# Plot the time series data
plt.figure(figsize=(10, 6))
plt.plot(weekly_data, label='Total Volume')
plt.title('Weekly Total Volume of Avocados (Albany - Conventional)')
plt.xlabel('Date')
plt.ylabel('Total Volume')
plt.legend()
plt.show()
from statsmodels.tsa.seasonal import seasonal_decompose

# Decompose the time series
decomposition = seasonal_decompose(weekly_data, model='additive')

# Plot the decomposed components (trend, seasonal, residual)
decomposition.plot()
plt.show()

from statsmodels.tsa.statespace.sarimax import SARIMAX
from sklearn.metrics import mean_squared_error

# Define the SARIMA model (we'll use a basic (1, 1, 1)x(1, 1, 1, 12) configuration
sarima_model = SARIMAX(weekly_data, order=(1, 1, 1), seasonal_order=(1, 1, 1, 52))

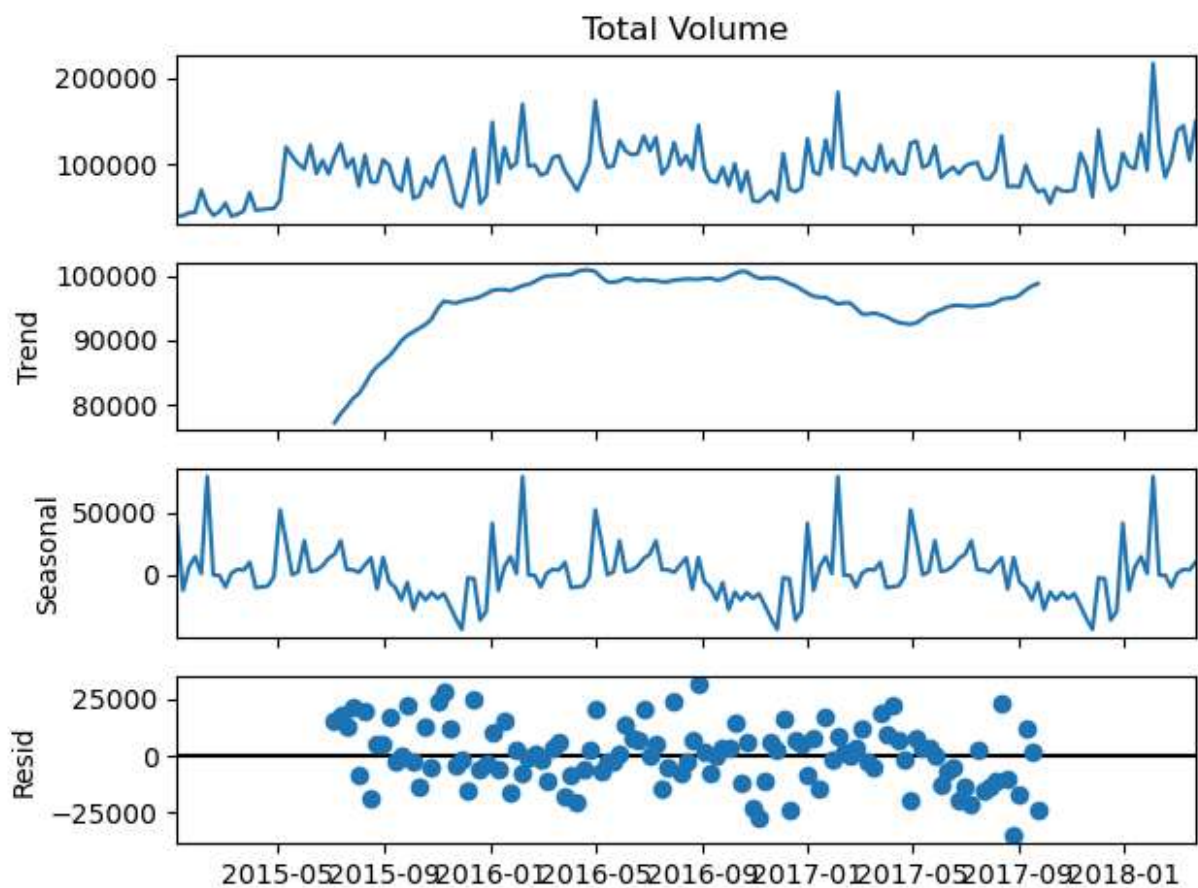
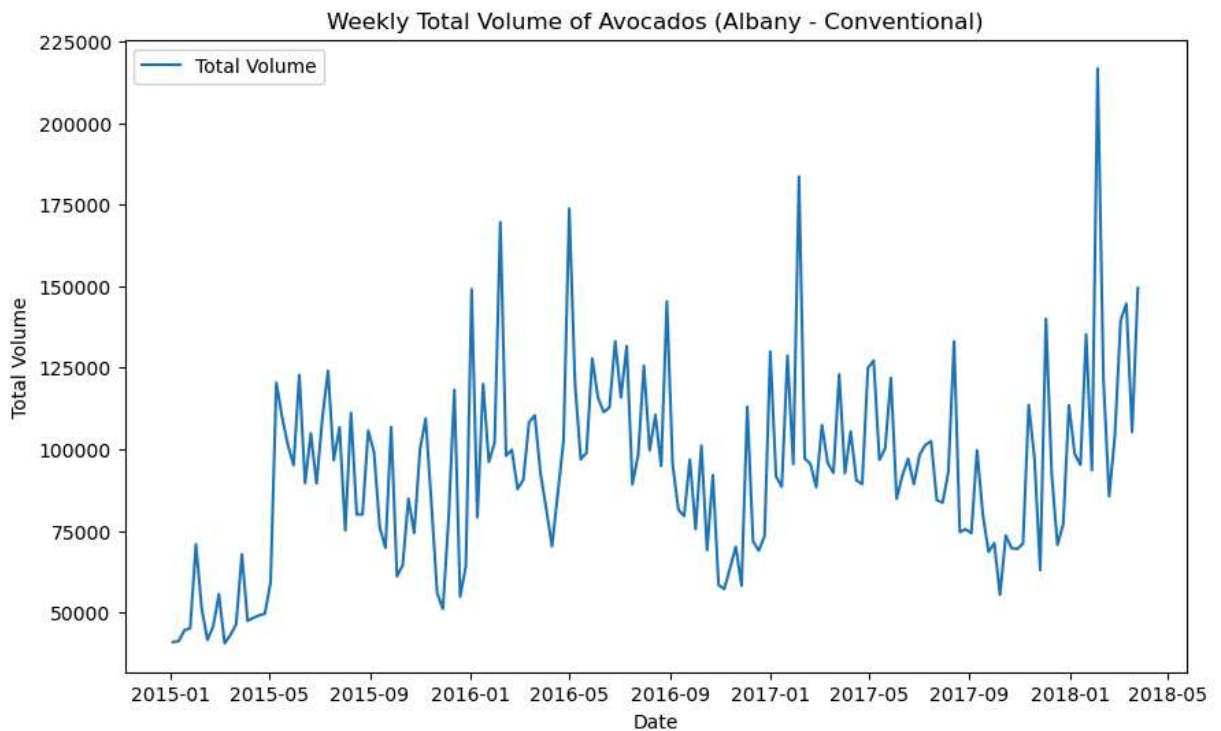
# Fit the model
sarima_fit = sarima_model.fit(dispatch=False)

# Forecast for the next 12 weeks
forecast = sarima_fit.forecast(steps=12)

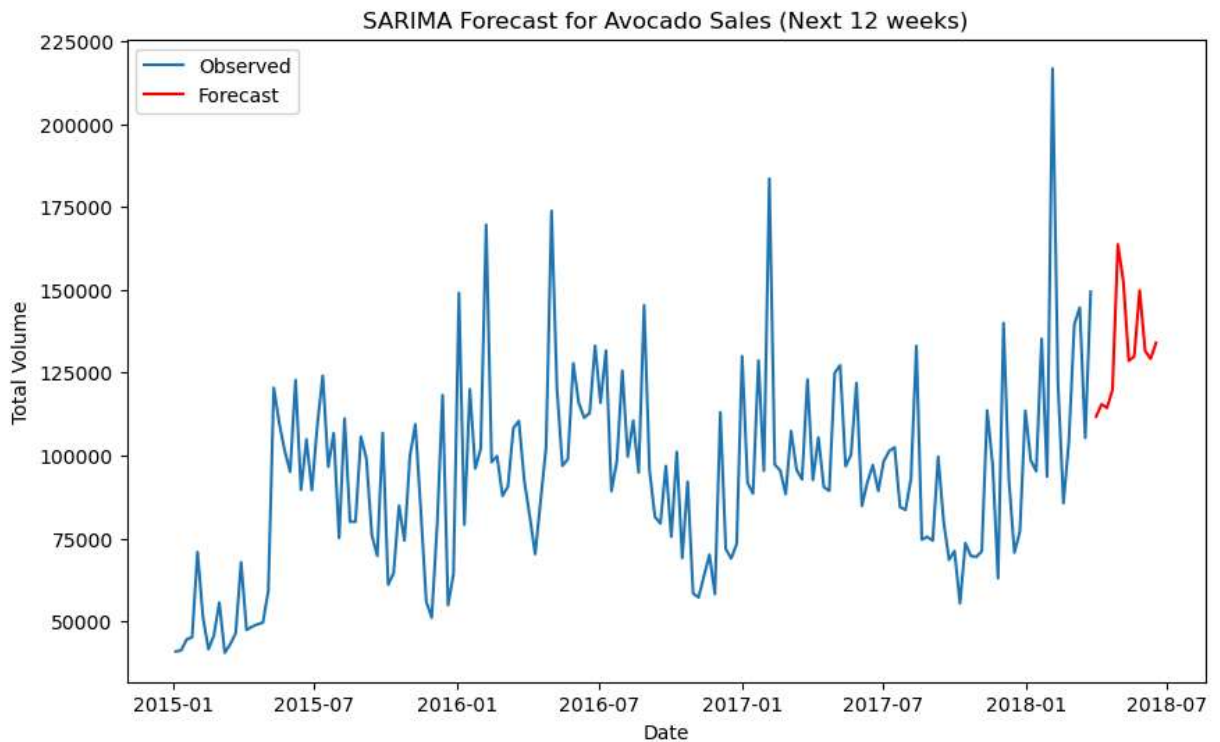
# Plot the forecast
plt.figure(figsize=(10, 6))
plt.plot(weekly_data, label='Observed')
plt.plot(forecast, label='Forecast', color='red')
plt.title('SARIMA Forecast for Avocado Sales (Next 12 weeks)')

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plt.xlabel('Date')  
plt.ylabel('Total Volume')  
plt.legend()  
plt.show()
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C:\Users\samee\anaconda3\Lib\site-packages\statsmodels\tsa\statespace\sarimax.py:86  
6: UserWarning: Too few observations to estimate starting parameters for seasonal AR  
MA. All parameters except for variances will be set to zeros.  
warn('Too few observations to estimate starting parameters%s.'
```



In []: