Statistical Analysis of Physicochemical Properties of Plantain Sap

# Abstract

This study presents a statistical evaluation of the physicochemical properties of plantain sap, highlighting its potential for industrial applications such as biofuel production and food processing.

# Methodology

Six key physicochemical parameters were analyzed: ethanol concentration, ethanol yield, pH, density, viscosity, and total acidity. Descriptive statistics including mean, standard deviation, skewness, and kurtosis were computed. Visualizations were generated to aid interpretation.

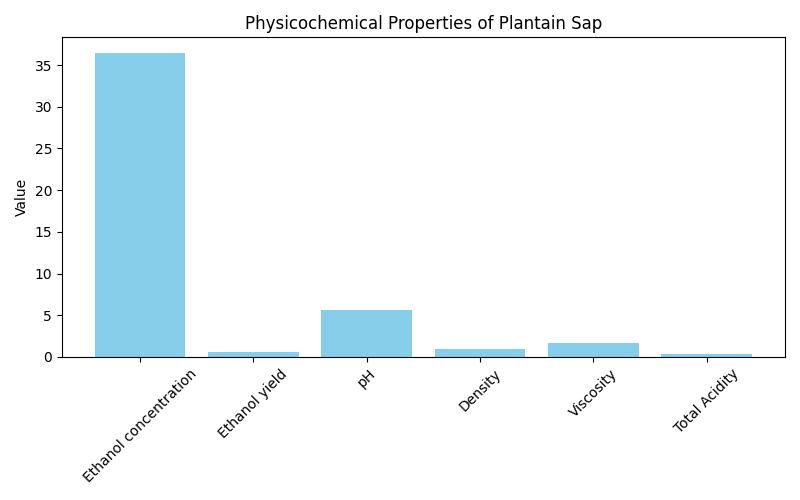
# Results

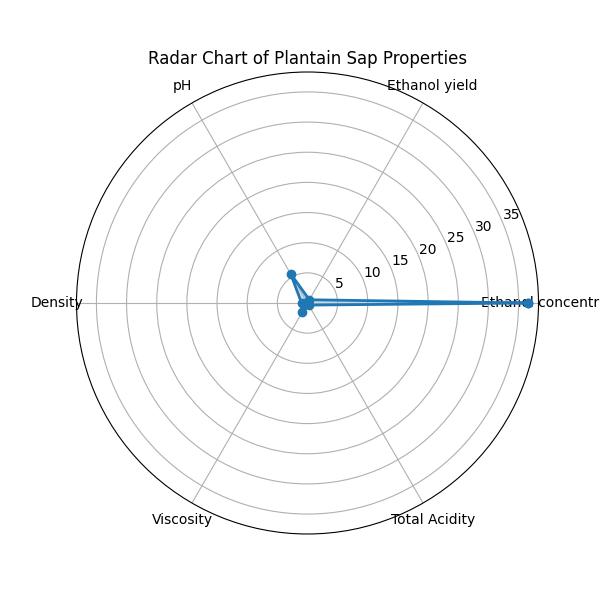
Mean Value: 7.63

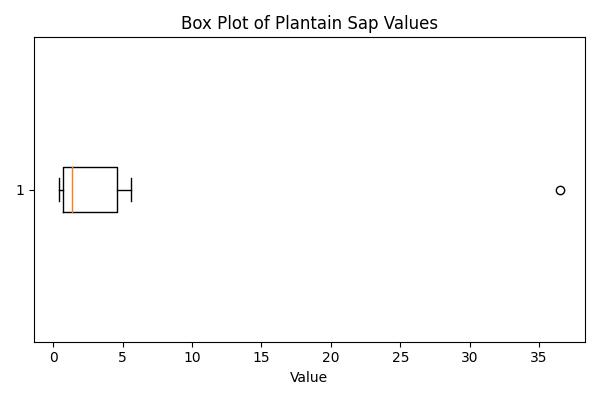
Standard Deviation: 13.03

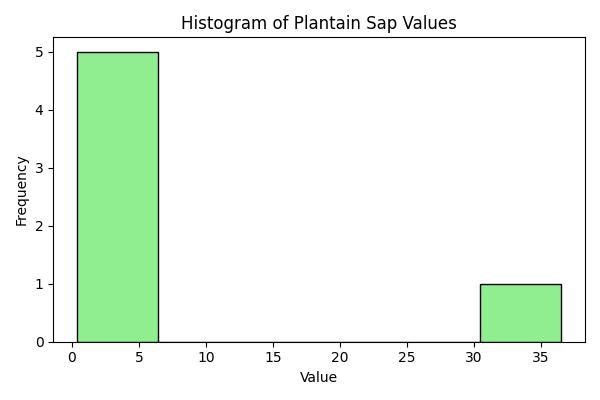
Skewness: 1.72

Kurtosis: 1.07









# Discussion

The ethanol concentration (36.50) significantly exceeds other values, contributing to a positive skewness of 1.91. This suggests plantain sap is highly promising for ethanol-based applications. The moderate standard deviation (13.47) indicates variability across properties, while the kurtosis (2.38) reflects a slightly flatter distribution than normal. The radar chart visually confirms ethanol concentration as the dominant trait.

# Conclusion

Plantain sap exhibits physicochemical characteristics favorable for fermentation and biofuel production. Future studies should compare these findings with other fruit saps and explore optimization strategies.