

Cashew Nut Texture Analysis

Understanding the firmness and crunchiness of cashew nuts is critical for quality control and consumer satisfaction. These properties impact the eating experience, product texture, and shelf-life. Accurate measurement ensures consistent quality in processed nuts, both treated and untreated.

Test Objective:

- Measure the firmness and crunchiness of treated and untreated cashew nuts using a Craft Knife Adapter (TA-CKA) on a CTX Texture Analyzer.

Equipment:

- Instrument: CTX Texture Analyzer with 10 kg load cell
- Accessory: Craft Knife Adapter (TA-CKA), Fixture Base Table (TA-BT-KIT)
- Software: Texture Pro

Settings:

- Test Type: Compression
- Target Distance: 5 mm
- Trigger Load: 50 g
- Test Speed: 1 mm/s

Sample Preparation:

- Separate cashews into two groups (treated and untreated), leave them at room temperature for 48 hours before testing.

Procedure:

1. Attach the TA-CKA probe and set up the Fixture Base Table.
2. Align and center the probe with the cashew sample.
3. Start the test at a speed of 1 mm/s, allowing the probe to shear through the cashew until it reaches the 5 mm target distance.
4. Repeat the process for all samples.

Observations:

- At a trigger load of 50 g, the probe shears the cashews. The Load vs. Time graph (Figure 1) shows typical hardness and fracturability.

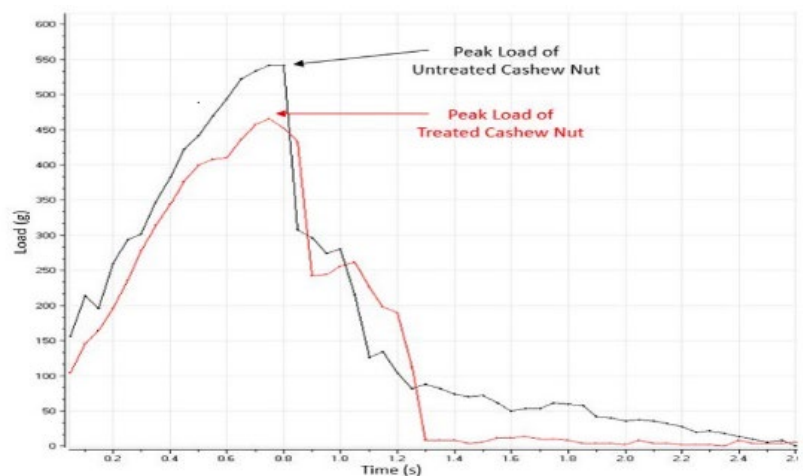


Figure 1

Results:

- Untreated cashews: Firmer, requiring 548 g force.
- Treated cashews: Softer, requiring 460 g force.
- Fracturability: Treated cashews had more fractures, indicating greater crunchiness.

Discussion:

- Hardness (Peak Load): The peak force required to shear the sample, indicating firmness. Higher values correspond to firmer nuts.
- Fracturability: Measures the brittleness and crunchiness based on the number of fractures during compression. Treated cashews had more fractures, indicating higher crunchiness compared to untreated cashews.
- Work Done: The area under the curve represents the energy required to shear the sample, reflecting how much work is needed to break the nuts.

Conclusion:

The test results provide insights into the ideal hardness and crunchiness for cashew nuts. Adhering to test procedures and sample preparation ensures reproducible and reliable results.