Production: CROISSANTS

Objective: Firmness measurement of croissants by cutting

Type of action: Cutting

Test setting:

Speed	Test mode	Trigger	Target	Hold
2 mm/s	Distance (c)	0 gf	55 mm	0 sec

Accessory:

Blade of Warner Bratzler, Platform

Sample Preparation:

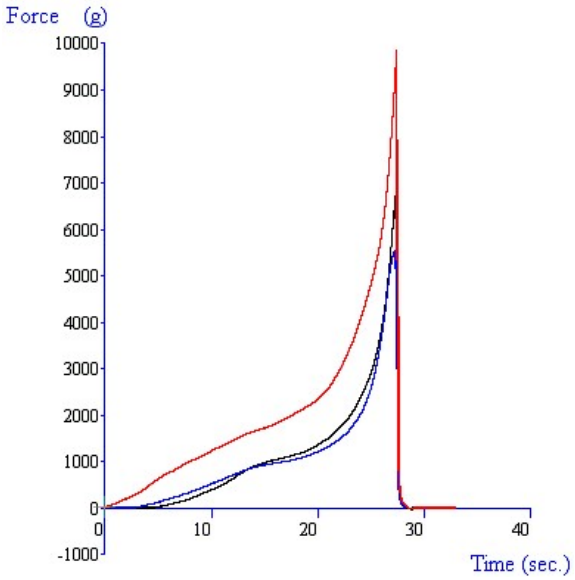
Samples are removed from their packets just prior to testing and each is then placed centrally under the Knife Edge.

Test Set-Up:

A blank plate is secured in the Heavy Duty Platform. The Knife Edge is attached to the load cell carrier and lowered toward the platform surface. Calibrate the blade to acknowledge the platform surface as a zero distance by clicking on:

Height Calibrate Probe: 60mm (selected blade return distance). The blade should then be raised to allow placement of the sample.

Typical plots:



The above curves were produced from croissants tested at 20C.

Observations:
As the blade moves down into the sample the force is seen to increase. The higher the force value, the firmer is the sample. Firmness is the property which changes with duration of shelf life, i.e. fresh samples normally require less force to cut in comparison to the same sample type produced on a previous date. The area under the curve is a measure of the total amount of work involved in performing the test. A higher area value indicates that a sample is much firmer.

Data Analysis:
☒Area (+)

Results

Sample	Mean Area (kg.s) (+/-S.D.)
A	59.7 +/- 3.9
B (no filling)	29.5 +/- 1.7
C (filled)	32.1 +/- 1.8

Notes:
- It is clear from the results that croissants A sample are substantially firmer than both C (filled) and B (no filling) b. The firmness shows a definite indication of the effect of shelf life on the freshness of the product.
- When attempting to optimise test settings it is suggested that the first tests are performed on the hardest samples to anticipate the maximum testing range required and ensure that the force capacity allows testing of all future samples.