Application manual No. 095

Production: POTATO

Objective: Shearing force of potato after different cooking times using a knife blade

Type of action: Cutting test

Test mode settings:

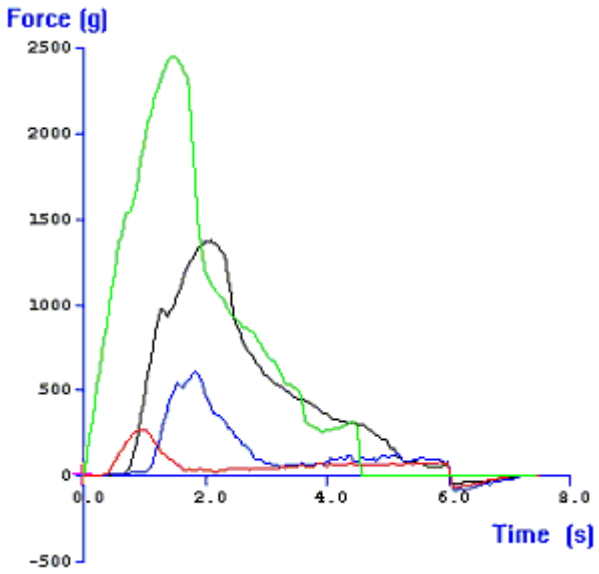
Speed	Test mode	Trigger	Target	Hold
2 mm/s	Distance (c)	5 gf	12 mm	0 sec

Accessory:
Blade of Warner Bratzler, Platform

Sample Preparation:
The Slotted Insert is secured on the Heavy Duty Platform. The Knife Edge is attached to the load cell carrier and lowered into the Slotted Insert. The Heavy Duty Platform is repositioned so that there is no contact between the blade and slot surfaces and a 'blank' test run as a check. The blade is then raised to allow placement of the sample.

Test Set-Up:
The potatoes are cut into pieces of a uniform size and shape e.g. 1cm^3 . These are then cooked for specific lengths of time. For comparison purposes, sample dimensions and cooking times should be noted and kept constant. Immediately after cooking, each cube is placed centrally on the Slotted Insert under the blade. The test is then commenced.

Typical plots:



The above curves were produced from potato cubes (1cm^3) cooked for the following times: 0min, 1min, 2min, 3mins.

Observations:
The maximum force is seen to decrease substantially as the length of cooking time is increased.

Data Analysis:
☒Max Force

Results

Cooking time	Mean Maximum Force 'Firmness' (+/- S.D.) (g)
0 mins	2665.1 +/- 238.2
1 min	1226.7 +/- 170.0
2 mins	499.1 +/- 98.2
3 mins	267.0 +/- 34.6

Notes:

- It is important that the sample is placed centrally under the blade, otherwise a false trigger may occur which will then be followed by the slip of the sample across the base plate into the central cavity, thus producing an incorrect force profile.
- If the sample is much firmer, a load cell with a higher force capacity may be required e.g. 25kg.
- When attempting to optimize 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.