

Clingstone Peach Firmness Inspection Procedure for 2009

Summary

This document describes the methodology used to determine flesh firmness of peaches using the GÜSS Fruit Texture Analyser (FTA). The FTA will be used to replace the subjective fingertip grade decision for soft fruit.

Firmness Measurement Method

The FTA test will be conducted on all fruit suspected of being soft that you find as you touch the fruit on the table during the inspection process.

Step 1) Using only the special peeling knife provided by your supervisor (no personal pocket knives or other knives should be used), remove a small circular section of peel between the size of a nickel and a quarter from the center of each cheek of the peach to be tested. Try to keep the amount of flesh removed when peeling to a minimum. **The location selected for testing should not contain a bruise**, so you will need to peel and test a different spot near the center of the cheek if there happens to be a bruise at the center of the cheek. If, after removing the peel, the peach flesh at that spot has a dark or translucent appearance, it is probably bruised and you will need to choose another spot nearby that has unbruised flesh.

Step 2) Place the peach in the triangular holder designed to hold the fruit and slide the fruit under the probe tip. If the fruit is too large to fit under the probe, you can raise the probe by pressing the “(UP)” arrow button (top right button) on the keypad. One of the cut surfaces of the peach should face the probe (i.e., be perpendicular or at a 90-degree angle to the penetrometer probe). The center of the cut surface should be directly below the probe.

Step 3) Press the “START TEST” button on the instrument keypad to start the measurement process for each new peach.

Step 4) Hold the peach with one hand so that it does not move during measurement. Using your other hand, press and **hold** the green button on the front of the instrument’s base. The probe will descend, penetrate the fruit, and take a measurement only while the green button is pressed. Do not release the green button during measurement unless there is a safety issue (the probe will automatically stop if you release the green button). Once the measurement is complete, the probe will automatically retract. Only when the probe begins to rise may you release the green button.

Step 5) Turn the fruit to the other side, hold securely, press and hold the green button to lower the probe into the flesh on the second side of the fruit for measurement.

Step 6) The average (AVG:) firmness reading will automatically appear at the bottom of the display.

Instrument Shutdown

To shutdown the instrument at the end of the day, or whenever you need to transport the instrument, press the “CANCEL TEST” button to return to the FTA display screen (shows FTA in the top left corner of the display). The words “(SHUT DOWN)” should appear in the lower left corner of the display. Press the arrow button below and the probe will automatically lower itself to the lowest position. Once the probe is all the way down, you can turn the instrument off (the power switch is at the back).

Emergency Stop

In an emergency, you can stop the probe by pressing the red button on the left of the instrument. To resume operation, rotate the red button in a clockwise direction and let it pop back up.

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Setup

To install the LCD/Keypad:

- 1) Turn the FTA off.
- 2) Connect the LCD/Keypad cable to the FTA. The connector is located on the back of the FTA, on the left.

The FTA uses a series of 11 menus to setup, calibrate, verify the calibration, and reset the FTA to factory settings. To setup the FTA for clingstone peach inspection, you only need to use menus 1, 2, 3, 5, 7, and 9. To access the menus you press the “MENU” button and enter the **PASSWORD: 12345** .

Menu 1 – MEASURING UNIT

FIRMNESS: lb	Menu one is used to set the measurement units of the FTA. The correct values for clingstone peach inspection are shown in the list at the left. To view or change the units, first press the “(SELECT)” key, and then you can scroll through the four settings using the arrow keys at the bottom of the keypad. Press the “(CHANGE)” key to change the unit and then the “(EXIT)” key.
TEST DEPTH: mm	
SIZE: in (not used)	
MASS: lb (not used)	

Menu 2 – PROBE SETTINGS

FORWARD: 30mm/sec	Menu two is used to control the probe operational settings. The correct values for clingstone peach inspection are shown in the list at the left.
MEASURE: 20mm/sec	
REVERSE: 40mm/sec	The process to view or change a setting is the same as that described for menu 1 above.
TEST DEPTH: 6.0mm	
THRESHOLD: 0.176 lb	
REVERSE INC: 25mm	

Menu 3 – READINGS PER BATCH

FIRMNESS: 2	Menu three is used to setup the automatic averaging feature so that the FTA will automatically determine the average firmness for the two cheek readings. The correct values for clingstone peach inspection are shown in the list at the left. The process to view or change a setting is the same as that described for menu 1 above.
READING(S)/FRUIT: 2	
SIZE: 0 (not used)	
MASS: 0 (not used)	

Menu 5 – CALIBRATE PROBE

Proper calibration of the FTA is a critical step in the performance of the instrument. A detailed description, including figures, of the calibration process is described under menu item 5 of the LCD/Keypad manual (LCDKeypad.pdf file) accompanying this document. Note: some of the menu items have changed since this manual was developed (menu items 1, 2, 3, and 5 are the same, and menu item 7 is listed as 9 in the manual.) You will need the 5 lb calibration weight to perform this step. After pressing the “(SELECT)” button you will be guided through the process by instructions shown on the display. The basic steps are: 1) Enter the calibration mass in grams (written in black ink on the test weight). 2) Loosen the two locking bolts at the top of the load cell and gently turn it upside down so that it can rest on the flat surface below (take care not to crimp the cable). 3) Ignore the instruction for the “small plastic interface” and press the green

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button to record the weight of the probe itself (no weight). 4) Place the 5 lb calibration weight on the probe and press the green button. 5) Press the “(YES)” button when asked to save.

Menu 7 – VERIFY CALIBRATION

This menu item is used to verify the calibration of the FTA. This step should ALWAYS be performed following calibration of the FTA and can be used if the readings are challenged by a grower or processor. The steps are similar to calibration. Again ignore the instruction for the “small plastic interface”. You need to press the green button without the test weight, when instructed; otherwise you will get a zero reading. Once the display shows “VERIFY CALIBRATION” at the top, you may place the 5 lb weight on the probe.

Menu 9 – RESET TO FACTORY

Occasionally the probe may not go back up all the way, even if the FTA is turned off and back on. In order to fix this, go to menu 9 - Reset to Factory. Press “(SELECT)” and a message will pop up asking if you're sure you want to reset to factory. Then press yes. After you reset to factory you have to recalibrate the probe (menu 5) and reset the values in menus 1, 2, and 3.

Maintenance

- Do not let fruit juice dry on the machine.
- Clean the working surface of the FTA with a damp cloth at the end of each day.
- Do not open the machine - there are no user serviceable parts inside.
- Prevent fluids or dust from penetrating the electric and working parts of the machine.
- The load cell and probe assembly are sensitive measuring equipment - at no stage should the probe or load cell receive hard knocks.