

NEW KIWIFRUIT DRY WEIGHT PROTOCOL

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Kiwifruit Sampling Protocol

Preliminary Field Sampling

1. Three healthy vines across the vineyard will be chosen for dry weight (DW) sampling.
2. Facing the trellis with the trunk of the vine as the center, the vine is divided into five equal sections: two to the left of center (upper and lower), the center and two to the right of center (upper and lower).
3. Six fruits are picked, from one side of the vine to the other, in each section on each of the three vines (30 per vine).

Preliminary Box Sampling

1. Five boxes from the largest and smallest fruit size of the lot will be selected across the lot for dry weight (DW) evaluations.
2. Three fruit from each box-size will be used for DW determinations.

Materials



Picture 1. Dehydrator: Nesco/American Harvest Snackmaster® Pro Food Dehydrator Product No. FD-50 <http://nesco.com> (\$59.95). Automatic timer: GE 7-day home Security Timer DESC.: GE5112N-71M4SP Kmart (\$7.99). 6 Outlet Metal Surge Protector: Power Sentry or comparable, Walmart (\$12.77).



Picture 2. Balance, comparable to Denver Instruments Model MXX-212 with a capacity of 210 g, readability of 0.01g, taring range of 0-210 g. If purchased from Fisher Scientific includes operations manual and power supply and calibration weight, cat. No. 01-915-02 (\$315.40).



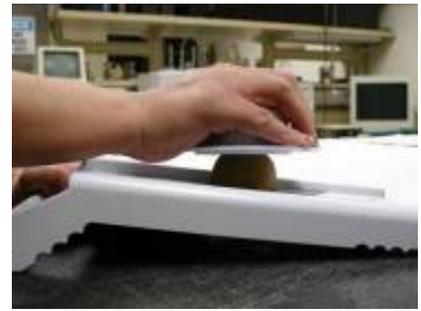
Picture 3. Multi Slicer: Progressive 6 piece Mandolin Multi Slicer #HG50 Progressive.com, Marshall's, Amazon.com (\$10.99).

Table 1. Information on materials necessary to measure kiwifruit dry weight (DW).

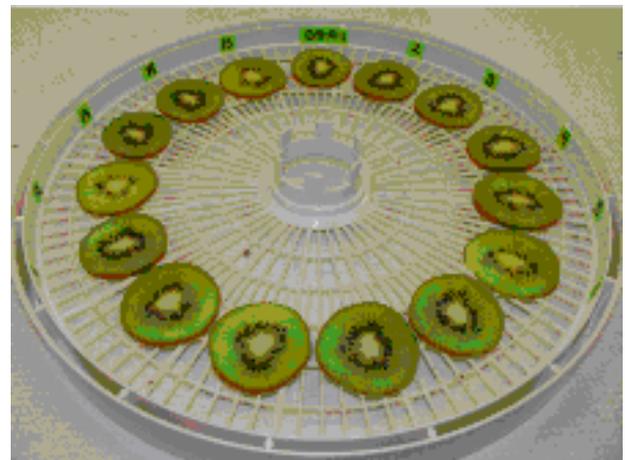
Material	Place – Price	Special Specifications
Dehydrator	http://nesco.com – \$59.95	Nesco Product # FD-50
Automatic Timer	Kmart – \$7.99	GE5112N-71M4SP
6 Outlet Surge Protector	Walmart – \$12.77	Any comparable
Multi Slicer	Progressive.com – \$10.99	Progressive Product No. HG50
Balance	Fishersci.com – Cat. No. 01-915-02 (\$315.40)	Denver Instruments Model MXX-212, capacity 210 g, readability 0.01 g, taring range 0-210. Be sure the balance includes the power supply.
6” Sharp Knife	Any	
Clip Board	Any	
Cutting board	Any	
Thermometer	Free	carlos@uckac.edu

Drying Process Procedure

- a. The dehydration process should take place in a secure and clean area such as a kitchen or small quality control laboratory.
- b. Take the 15 kiwifruit samples (without peeling them) and cut off 2/3 of the kiwifruit perpendicular to its long axis by using a sharp knife, then use the vegetable slicer to cut off a 1/8" thick slice from the center of the fruit.



- c. Identify and label lot sample (column 1 in data sheet). As each dehydrator has three turntables and each can hold 15 samples at a time, we recommend, using each turntable level for each lot sample (15 kiwis) to avoid potential sample confusion. Thus, we can run three lots per each 10 hour per dehydrator.
- d. Within each turntable, assign a number to each slice to correspond with the position in the dehydrator (column 2 in data sheet). As each dehydrator has three turntables and each can hold 15 samples at a time, we recommend using each turntable level for lot sample (15 fruit) to avoid potential sample confusion. We suggest always working clockwise from turntable label to avoid confusion.



- e. Weigh each slice and record the initial weight (g), to the nearest hundredths, and dehydrator position number.



- f. When all of the sample slices have been placed in the dehydrator, turn on the automatic timer on the dehydrator for approximately 8 hours and 45 minutes.



- g. After 8 hours and 45 minutes, reweigh each slice and record the final weight on your data sheet. Place the slices carefully back in the same positions in the dehydrator.



- h. Run dehydrator for two hours longer and check weight again and record it under the “check weight” column in your data sheet. Compare the weights between the last two columns on your data sheet. If the weight has not changed for each sample, the dehydration process is done. Be sure that burning does not occur anytime during the dehydration process. Be sure that air temperature does not increase higher than 160°F (71°C).
- i. If samples are dehydrated overnight using an automatic timer for 8 hours and 45 minutes or if the dehydrator has been off for a while before you recorded DW, warm up the dehydrators for about 30 minutes before the slices are weighed (final weight). Then follow the steps from step F on the protocol.

Data Sheet Template

SAMPLE ID	DATE	POSITION IN TURNTABLE	FRESH SLICE WEIGHT (TIME:)	FIRST DRY SLICE WEIGHT (TIME:)	SECOND DRY SLICE WEIGHT (TIME:)
		1			
		2			
		3			
		4			
		5			
		6			
		7			
		8			
		9			
		10			
		11			
		12			
		13			
		14			
		15			
Average					
Standard Deviation					

We thank Barbara Windmiller, Waine Aalto, and John Fagundes for their comments on this protocol.