

REASSESSMENT OF HOUSEHOLD MEASURES AND WEIGHTS FOR SELECTED FRUIT IN THE USDA NATIONAL NUTRIENT DATABASE FOR STANDARD REFERENCE

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ABSTRACT

The USDA National Nutrient Database for Standard Reference (SR) includes common household measures with corresponding gram weights for most food items. These weights and measures are important for dietitians, researchers, educators, and consumers to help estimate the nutrient content in a specified portion. The weights and measures in SR are derived from multiple sources, including: food industry files; published sources; U.S. Agricultural Marketing Service (AMS) standards; the USDA National Food and Nutrition Analysis Program (NFNAP); and other USDA studies. The Food and Drug Administration (FDA) has standard weights and measures for the 20 most frequently consumed raw fruits. These data and recently acquired NFNAP data resulted in the reassessment of weights and measures in some of the raw fruits in SR. In addition to FDA and NFNAP, the following resources were considered: current SR data; USDA's MyPyramid; various food industry organizations and retailers; USDA's Food Surveys Research Group; AMS standards and statistics; and Price Look-Up (PLU) sizes. Discrepancies arose among the various sources and methods of determining the weights and sizes for many of the fruits, including raw peaches. Reassessment of peaches resulted in significant changes in gram weights and an additional size designation of "extra large." For foods that are frequently consumed, such as bananas and apples, a modest change in the gram weight for 1 serving of fruit can have a significant impact on food consumption surveys and other research studies. Thus, great care and consideration were given to this reassessment process, including external review of all changes prior to dissemination.

National Food and Nutrient Analysis Program (NFNAP) Methods for Fruit

- Nationwide probability-based retail sampling of foods
- Four different regions of United States
- Two different seasons
- Serpentine random sampling method (see below)
- Multiple measurements in each region



NFNAP Data Were Compared With:

- Food and Drug Administration (FDA) labeling standard
- USDA Agricultural Marketing Service commodity standards
- Food industry and trade associations
- Earlier USDA studies
- Other: Price Look-Up (PLU) codes, The Packer Guide, USDA Food Surveys Research Group



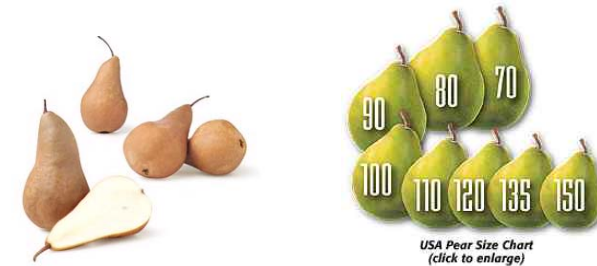
Preliminary NFNAP Weights Compared to SR and FDA

NDB	Fruit	Serving Size	NFNAP weight, g	Old SR weight, g	FDA standard, g
09003	Apples	1 cup, sliced 1 medium	109 148?	110 138	154
09038	Avocado, CA	1 medium	136 (1/5 = 27)	173 "1 fruit"	1/5 med. 30 (1 med. = 150)
09040	Banana	1 medium 1 cup, sliced	112 155	118 150	126
09181	Cantaloupe	1/8 medium	121	69	1/4 med. 134 (1/8 med. = 67)
09112	Grapefruit	1/2 medium	171 (4" dia)	123 (3-3/4")	154
09132	Grapes	1 cup 10 grapes	151.4 48.8	160 50	3/4 cup 126 (1 cup 168)
09184	Honeydew	1 wedge (1/8)	204	160 (6-7" melon)	1/10 melon 134 (1/8 = 168)
09148	Kiwi fruit	1 medium 1 cup	67 "sliced" 179.5	76 177	2 med. 148 (1 med. 74)
09191	Nectarine	1 medium	139	136	140
09202	Orange, navel	1 medium	183	140	154
09236	Peach, raw	1 medium 1 cup, sliced	150 154	98 170	147
09252	Pear	1 medium 1 cup, sliced	178 139	166 165	166
09279	Plums (red and black)	1 medium 1 cup, sliced	125.7 (2-1/3") 162	66 ("1 fruit, 2-1/8 in.") 165	2 med. 151 (1 med. 76)
09316	Strawberries	1 medium	17	12	8 med. 147 (1 med. = 18)
09070	Sweet cherries	1 cherry 1 cup w/pits, yields	8.2 137.7	6.8 117	21 cherries (1 cup) 140 (1 cherry = 6.7)
09218	Tangerine	1 cup sections 1 medium	156.4 88.4 (2-1/2")	195 84 (2-3/8")	1 medium 109
09326	Watermelon	1/16 med. SR 1 cup, diced 1 whole, EP	258 168 3104	286 152 4518	1/18 med. (2 c diced) = 280 (1 cup = 140)

Raw Pear Example

Size	NFNAP Weights*, g (n)				
	Green anjou	Red anjou	Bartlett	Bosc	Combined
small	174 (13)	128 (16)	153 (16)	159 (18)	148 (64)
medium	200 (15)	155 (16)	177 (16)	180 (17)	178 (64)
large	229 (14)	187 (16)	215 (16)	196 (17)	209 (64)
extra large	253 (15)	252 (18)	241 (16)	240 (17)	250 (64)

*Derived from two separate nationwide random samplings of raw pears from the retail market, in summer 2000 and spring 2001



Pear Sizing and Weight Comparison

PLU	USA Pears Sizes and Weights*			NFNAP weight, g	SR Weight, g	FDA Standard
	Size/# per box	Descriptor	EP weight, g			
small	150	"extra sm"	122.4	147 small	139	
small	135		136.0			
small	120		153.0			
small	110		166.9	178 medium	166	166
large	100		183.6			
large	90	pear avg.	204.1	209 large	209	
large	80	pear avg.	229.5			
large	70	"large"	262.3			

*Calculations based on pears standard 4/5 bushel weight of 44 lb

Discussion and Conclusions

The NFNAP weights are greater than the current SR weights for the small and medium pears, but the same for the large size. Due to the large sizes of the pears found in the nationwide retail sampling, an extra large size needs to be added for pears in SR. The weight for a medium pear is now greater than the current FDA standard. The USDA Agricultural Marketing Service standards designate 1 serving of raw pear as 2-1/2" diameter and 3-1/2" long, but they do not provide a weight or size designation. The PLU sizes did not designate medium, so this was not useful, either. USA Pears trade association provided helpful feedback and their reviewer determined that our new weights were in line with theirs. For 1 medium pear, energy will change from 96 to 103 kcal and fiber will change from 5.1 to 5.5 g. Nutrient changes for some measures of other fruit may be more significant. The pear and other new fruit weights will appear in the 2006 release (number 19) of SR.