



Food and
Nutrition
Service

Park Office
Center

3101 Park
Center Drive
Alexandria
VA 22302

DATE: March 30, 2016

MEMO CODE: SP 32-2016

SUBJECT: Additional Yield Information for School Meals

TO: Regional Directors
Special Nutrition Programs
All Regions

State Directors
Child Nutrition Programs
All States

In January 2012, the “Nutrition Standards in the National School Lunch and School Breakfast Programs,” final rule was published and required schools to serve a greater quantity and variety of fruits and vegetables and more whole grains/whole grain-rich products. To support the updated meal pattern requirements and assist school food operators with menu planning, an inter-agency agreement was established between USDA, Food and Nutrition Service (FNS) and USDA, Agricultural Research Service (ARS) to conduct analytical yield studies.

Based on laboratory testing conducted by ARS, new yields will be available for the following food items:

Fruits	Vegetables	
- apples, sliced - blueberries, wild - clementines - grapes - plums (2 ½”) - tangerines (150 count)	- acorn squash - beans, canned - broccoli florets (fresh and frozen) - broccolini - cilantro	- mushrooms, chopped - pumpkin - spaghetti squash - sweet potato fries - tomato, cherry halves - vegetable purées

The Additional Yield Information for School Meals can be accessed online at: http://www.fns.usda.gov/sites/default/files/tn/fbg_batchyieldtable.pdf.

New yields are also available for the following grains items: whole grain and whole grain-rich pastas and parboiled brown rice. The revised grain chart was released in June 2015 and is available at: http://www.fns.usda.gov/sites/default/files/tn/fbg_grainchart.pdf.

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Regional Directors
State Directors
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All procedures and methods followed to obtain yield data were performed in a manner similar to an institutional setting (school foodservice). This includes: careful portioning and weighing, utilizing the appropriate measuring tools (scoops/ladles) and a calibrated scale. A variety of samples were procured from different vendors.

School food authorities should contact their State agencies for additional information. State agencies may direct questions concerning this guidance to the appropriate FNS Regional Office.

Original Signed

Cheryl Jackson Lewis
Director
Nutrition Promotion and Technical Assistance Division

Section 1 Meat/Meat Alternate

Section 1 – Meat/Meat Alternate

1 Food As Purchased, AP	2 Purchase Unit	3 Servings Per Purchase Unit, EP	4 Serving Size Per Meal Contribution	5 Purchase Unit for 100 Servings	6 Additional Information
BEANS, CANNED					
Beans, Black (Turtle), dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (110 oz)	45.00	¼ cup drained, unheated beans	2.3	1 No.10 can = about 71 oz (11 ¼ cups) drained, unheated beans
	Pound	10.14	¼ cup drained, unheated beans	9.9	
Beans, Black-eye Peas, dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (108 oz)	46.00	¼ cup drained, unheated beans	2.2	1 No.10 can = about 78.5 oz (11 ½ cups) drained, unheated beans
	Pound	9.37	¼ cup drained, unheated beans	10.7	
Beans, Garbanzo, dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (110 oz)	45.50	¼ cup heated, drained beans	2.2	1 No.10 can = about 72 oz (11 ⅔ cups) heated, drained beans
	Pound	10.11	¼ cup heated, drained beans	9.9	
Beans, Kidney, dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (108 oz)	44.00	¼ cup drained, unheated beans	2.3	1 No.10 can = about 72 oz (11 cups) drained, unheated beans
	Pound	9.77	¼ cup drained, unheated beans	10.3	
Beans, Navy, dry canned <i>Whole</i>	No. 10 can (108 oz)	44.00	¼ cup drained, unheated beans	2.3	1 No.10 can = about 76 oz (11 cups) drained, unheated beans
	Pound	9.26	¼ cup drained, unheated beans	10.8	
	No. 10 can (108 oz)	39.00	¼ cup heated, drained beans	2.6	1 No.10 can = about 72 oz (9 ¾ cups) heated, drained beans
	Pound	8.66	¼ cup heated, drained beans	11.6	
Beans, Pinto, dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (108 oz)	40.50	¼ cup drained, unheated beans	2.5	1 No.10 can = about 73 oz (10 ⅙ cups) drained, unheated beans
	Pound	8.87	¼ cup drained, unheated beans	11.3	
PUREE, BEANS ^{1,2}					
Beans, Puree (Includes: garbanzo, navy, black-eye, pinto, black beans)	No. 10 can (110 oz)	46.50	¼ cup pureed beans	2.2	1 No.10 can pureed with liquid = 110 oz (about 11 ⅝ cups) pureed beans
	Pound	6.76	¼ cup pureed beans	14.8	

¹ Liquid from canned beans used to puree beans; no additional liquid added.

² Pureed foods such as fruits and vegetables may contribute to meal pattern requirements, provided that the dish that contains the pureed food also provides an adequate amount of recognizable, creditable fruits or vegetables. Additional information regarding crediting pureed foods is available in Memo SP 10-2012 v.9.

Section 2 Vegetables

Section 2 – Vegetables - Red/Orange Subgroup

1 Food As Purchased, AP	2 Purchase Unit	3 Servings Per Purchase Unit, EP	4 Serving Size Per Meal Contribution	5 Purchase Unit for 100 Servings	6 Additional Information
PUMPKIN					
Pumpkin, Fresh <i>Whole</i>	Pound	4.00	¼ cup diced, cooked vegetable	25 .0	1 lb peeled, diced pumpkin (without seeds) = 0.28 lb (about 1 cup) cooked pumpkin
PUREES²					
Butternut Squash <i>Puree</i>	Pound	8.00	¼ cup vegetable	12.5	1 lb AP = 1 lb (about 2 cups) butternut squash puree
Carrot <i>Puree</i>	Pound	7.00	¼ cup vegetable	14.3	1 lb AP = 1 lb (about 1 ¾ cups) carrot puree
SWEET POTATOES					
Potatoes, Sweet, Fries, frozen <i>Crinkle Cut</i> Includes USDA Foods	Pound	11.00	¼ cup cooked vegetable	9.1	1 lb AP = 0.70 lb (about 2 ¾ cups) baked sweet potato crinkle cut fries
Potatoes, Sweet, Fries, frozen <i>Puff</i>	Pound	10.00	¼ cup cooked vegetable	10.0	1 lb AP = 0.76 lb (about 2 ½ cups) baked sweet potato puff fries
Potatoes, Sweet, Fries, frozen <i>Straight Cut</i>	Pound	11.50	¼ cup cooked vegetable	8.7	1 lb AP = 0.70 lb (about 2 ⅞ cups) baked sweet potato straight cut fries
Potatoes, Sweet, Fries, frozen <i>Waffle Cut</i>	Pound	12.00	¼ cup cooked vegetable	8.4	1 lb AP = 0.67 lb (about 3 cups) baked sweet potato waffle cut fries
Potatoes, Sweet, Fries, frozen <i>Wedge Cut</i>	Pound	9.50	¼ cup cooked vegetable	10.6	1 lb AP = 0.67 lb (about 2 ⅞ cups) baked sweet potato wedge cut fries
SQUASH, WINTER					
Squash, Winter, fresh <i>Acorn, Whole</i>	Whole Squash (~2.10 lb) ³	8.50	baked squash flesh (about ¼ cup vegetable)	11.8	One Whole Acorn Squash 2.10 lb = 0.90 lb without seed, ready-to-cook squash One Whole Acorn Squash 2.10 lb = 0.54 lb (about 2 ⅞ cups) baked acorn squash flesh

² Pureed foods such as fruits and vegetables may contribute to meal pattern requirements, provided that the dish that contains the pureed food also provides an adequate amount of recognizable, creditable fruits or vegetables. Additional information regarding crediting pureed foods is available in Memo SP 10-2012 v.9.

³ Represents the average weight for one whole squash.

Section 2 – Vegetables - Red/Orange Subgroup

1 Food As Purchased, AP	2 Purchase Unit	3 Servings Per Purchase Unit, EP	4 Serving Size Per Meal Contribution	5 Purchase Unit for 100 Servings	6 Additional Information
Squash, Winter, fresh <i>Spaghetti, Whole</i>	Whole Squash (~2.80 lb) ³	10.00	baked squash flesh (about ¼ cup vegetable)	10.0	One Whole Spaghetti Squash 2.80 lb = 0.89 lb without seeds, ready-to-cook squash One Whole Spaghetti Squash 2.80 lb = 0.51 lb (about 2 ½ cups) baked spaghetti squash flesh

TOMATOES

Tomatoes, fresh <i>Cherry, Whole, without Stem</i>	Pound	12.10	¼ cup whole vegetable	8.3	1 lb AP = 0.95 lb (about 2 ¾ cups) halved, ready-to-serve cherry tomatoes 1 lb AP = 0.94 lb (about 2 ½ cups) halved, cherry tomatoes, cooked
	Pound	11.00	¼ cup halved vegetable	9.1	
	Pound	10.00	¼ cup halved, cooked vegetable	10.0	

Section 2 – Vegetables - Dark Green Subgroup

Broccoli, fresh <i>Florets</i>	Pound	11.50	¼ cup trimmed, cooked vegetable	8.7	1 lb AP = 0.63 lb (about 2 ⅞ cups) trimmed, cooked, broccoli florets
Broccoli, frozen <i>Florets, Trimmed</i> Includes USDA Foods	Pound	14.00	¼ cup cooked vegetable	7.2	1 lb AP = 0.99 lb (about 3 ½ cups) trimmed, cooked, broccoli florets
Broccolini, fresh	Pound	16.00	¼ cup trimmed, cooked vegetable	6.3	1 lb AP = 0.88 lb (about 4 cups) trimmed, cooked broccolini
Cilantro, fresh <i>(Coriander)</i>	Pound	73.00	¼ cup trimmed, chopped vegetable	1.4	1 lb AP = 0.84 lb (about 18 ¼ cups) trimmed, chopped, ready-to-serve cilantro

PUREE²

Spinach <i>Puree</i>	Pound	8.00	¼ cup vegetable puree	12.5	1 lb AP = 1 lb (about 2 cups) spinach puree
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Section 2 – Vegetables - Beans and Peas (Legumes)

Beans, Black (Turtle), dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (110 oz)	45.00	¼ cup drained, unheated vegetable	2.3	1 No.10 can = about 71 oz (11 ¼ cups) drained, unheated beans
	Pound	10.14	¼ cup drained, unheated vegetable	9.9	

² Pureed foods such as fruits and vegetables may contribute to meal pattern requirements, provided that the dish that contains the pureed food also provides an adequate amount of recognizable, creditable fruits or vegetables. Additional information regarding crediting pureed foods is available in Memo SP 10-2012 v.9.

³ Represents the average weight for one whole squash.

Section 2 – Vegetables - Beans and Peas (Legumes)

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Beans, Black-eye Peas, dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (108 oz)	46.00	¼ cup drained, unheated vegetable	2.2	1 No.10 can = about 78.5 oz (11 ½ cups) drained, unheated beans
	Pound	9.37	¼ cup drained, unheated vegetable	10.7	
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	Pound	10.11	¼ cup heated, drained vegetable	9.9	
Beans, Kidney, dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (108 oz)	44.00	¼ cup drained, unheated vegetable	2.3	1 No.10 can = about 72 oz (11 cups) drained, unheated beans
	Pound	9.77	¼ cup drained, unheated vegetable	10.3	
Beans, Navy, dry canned <i>Whole</i>	No. 10 can (108 oz)	44.00	¼ cup drained, unheated vegetable	2.3	1 No.10 can = about 76 oz (11 cups) drained, unheated beans
	Pound	9.26	¼ cup drained, unheated vegetable	10.8	
	No. 10 can (108 oz)	39.00	¼ cup heated, drained vegetable	2.6	1 No.10 can = about 72 oz (9 ¾ cups) heated, drained beans
	Pound	8.66	¼ cup heated, drained vegetable	11.6	
Beans, Pinto, dry, canned <i>Whole</i> Includes USDA Foods	No. 10 can (108 oz)	40.50	¼ cup drained, unheated vegetable	2.5	1 No.10 can = about 73 oz (10 ⅙ cups) drained, unheated beans
	Pound	8.87	¼ cup drained, unheated vegetable	11.3	
PUREE, BEAN^{1, 2}					
Beans, Puree <i>(Includes: black, black-eye, garbanzo, navy, pinto, beans)</i>	No. 10 can (110 oz)	46.50	¼ cup pureed vegetable	2.2	1 No.10 can pureed with liquid = 110 oz (about 11 ⅝ cups) pureed beans
	Pound	6.76	¼ cup pureed vegetable	14.8	

Section 2 – Vegetables - Other Subgroup

Mushrooms, fresh <i>Whole</i>	Pound	22.5	¼ cup trimmed, chopped vegetable	4.5	1 lb AP = 0.97 lb (about 5 ⅝ cups) trimmed, chopped, ready-to-cook mushrooms
	Pound	12.00	¼ cup trimmed, chopped, cooked vegetable	8.4	
					1 lb AP = 0.93 lb (about 3 cups) trimmed, chopped, cooked mushrooms

¹ Liquid from canned beans used to puree beans; no additional liquid added.² Pureed foods such as fruits and vegetables may contribute to meal pattern requirements, provided that the dish that contains the pureed food also provides an adequate amount of recognizable, creditable fruits or vegetables. Additional information regarding crediting pureed foods is available in Memo SP 10-2012 v.9.

Section 2 Fruits

Section 2 – Fruits					
1 Food As Purchased, AP	2 Purchase Unit	3 Servings Per Purchase Unit, EP	4 Serving Size Per Meal Contribution	5 Purchase Unit for 100 Servings	6 Additional Information
Apples, fresh <i>Whole</i> Includes USDA Foods	Pound	14.56	¼ cup raw, unpeeled, cored, sliced fruit	6.9	1 lb AP = 0.91 lb raw, unpeeled, cored apple
Blueberries, wild <i>Frozen</i> Includes USDA Foods	Pound	15.00	¼ cup thawed fruit	6.7	
Clementines, fresh <i>Whole</i>	Pound	6.00	1 whole, peeled clementine (about ¾ cup fruit)	16.7	1 lb AP = 0.86 lb (about 2 ¼ cups) peeled clementine sections
Grapes, fresh <i>Seedless</i> <i>Whole</i> <i>Stemmed</i>	Pound	11.66	¼ cup whole fruit	8.6	
Plums, fresh <i>Purple, Red, or Black</i> <i>2 ½ - inch diameter</i> <i>Whole</i>	Pound	4.00	1 whole, pitted plum (about ¾ cup fruit)	25.0	1 lb AP = 0.97 lb (about 2 ¾ cups) pitted plums
Tangerines, fresh <i>150 count</i> <i>Whole</i>	Pound	5.00	1 whole, peeled tangerine (about ½ cup fruit)	20.0	1 lb AP = 0.85 lb (about 2 ½ cups) peeled, tangerine sections