

**Table 4.1** Total nutrient uptake\* by selected crops.

Crop***	Region	Harvested Unit	--- lb uptake/harvested unit** ---			
			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S
Alfalfa (DM)	Argentina	ton	54	11	50	7.0
Barley	Argentina	bu	1.3	0.44	1.1	0.2
Bermudagrass	USA	ton	46	12	50	
Canola	China	bu	2.2	1.4	4.4	
Chickpea	India	cwt	4.6	0.84	4.9	
Corn	USA	bu	1.0	0.54	1.4	
Grape	China	ton	11	10	17	
Mustard	India	cwt	3.3	1.5	1.1	1.4
Oranges	China	ton	5.3	1.6	7.2	
Peach	China	ton	9.0	3.0	10	
Peanut	India	ton	126	23	74	7.8
Pear	China	ton	10	4.0	10	
Peas, green	India	ton	84	29	62	8.6
Potato	Australia	cwt	0.49	0.21	1.2	
Rice	USA	bu	0.71	0.38	1.1	
Safflower	India	cwt	3.9	0.84	2.2	1.3
Sorghum	India	cwt	2.2	1.3	3.4	
Soybean	USA	bu	4.9	1.1	2.3	
Sugar beet	China	ton	9.6	2.8	19	
Sugarcane	China	ton	3.6	0.72	4.2	
Sunflower	Argentina	cwt	4.0	2.5	3.5	0.50
Tobacco	China	cwt	3.9	1.2	7.1	
Tomato	India	ton	5.6	2.6	7.6	
Wheat, spring	USA	bu	2.2	0.76	1.5	
Wheat, winter	USA	bu	1.9	0.68	2.0	

\* Total nutrient uptake refers to the quantity of nutrient accumulated in the above ground portion, and harvested portions, of the plant by the time of sampling, usually physiological maturity or when uptake is at its maximum.

\*\*Reported nutrient uptake coefficients may vary regionally depending on growing conditions. Use locally available data whenever possible.

\*\*\*DM = dry matter basis; otherwise moisture content is standard marketing convention or at the stated moisture content.

**Last modified May, 2014.**

**Table 4.5** Nutrient removal\* by selected crops.

Crop***	Unit	Removal, lb/unit**			
		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S
Alfalfa (DM)	ton	51	12	49	5.4
Alsike Clover (DM)	ton	41	11	54	3.0
Bahiagrass	ton	43	12	35	
Barley grain	bu	0.99	0.40	0.32	0.09
Barley straw	bu	0.40	0.16	1.2	0.10
Barley straw	ton	13	5.1	39	3.0
Beans (dry)	bu	3.0	0.79	0.92	0.52
Bermuda grass	ton	46	12	50	
Birdsfoot trefoil (DM)	ton	45	11	42	
Bluegrass (DM)	ton	30	12	46	5.0
Bromegrass (DM)	ton	32	10	46	5.0
Buckwheat	bu	0.83	0.25	0.22	
Canola grain	bu	1.6	0.80	0.40	0.25
Corn grain	bu	0.67	0.35	0.25	0.08
Corn silage (67% water)	bu	1.6	0.51	1.2	0.18
Corn silage (67% water)	ton	9.7	3.1	7.3	1.1
Corn stover	bu	0.45	0.16	1.1	0.07
Corn stover	ton	16	5.8	40	2.6
Cotton (lint)	bale	32	14	19	
Cotton stover	ton	19	6.7	22	
Fescue (DM)	ton	37	12	54	5.7
Flax grain	bu	2.5	0.70	0.60	0.19
Flax straw	bu	0.7	0.16	2.2	0.15
Millet grain	bu	1.4	0.40	0.40	0.08
Millet straw	ton	15	4.3	39	
Mint oil	lb	1.9	1.1	4.5	
Oat grain	bu	0.77	0.28	0.19	0.07
Oat straw	bu	0.31	0.16	0.94	0.11
Oat straw	ton	12	6.3	37	4.5
Orchardgrass (DM)	ton	36	13	54	5.8
Peanut nuts	ton	70	11	17	
Peanut stover	ton	33	6.8	24	
Potato tuber	cwt	0.30	0.15	0.65	0.03
Potato above-ground stems & leaves	cwt	0.19	0.06	0.53	0.02
Red clover (DM)	ton	45	12	42	3.0
Reed canarygrass (DM)	ton	31	13	25	
Rice grain	bu	0.57	0.30	0.16	
Rice straw	ton	17	5.5	41	
Rye grain	bu	1.4	0.46	0.31	0.10
Rye straw	bu	0.80	0.21	1.5	0.14
Rye straw	ton	12	3.0	22	2.0
Ryegrass (DM)	ton	43	12	43	
Sorghum grain	bu	0.66	0.39	0.27	0.06

Crop***	Unit	Removal, lb/unit**			
		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S
Sorghum stover	bu	0.56	0.16	0.83	0.12
Sorghum stover	ton	28	8.3	42	5.9
Sorghum-sudan (DM)	ton	30	9.5	34	5.8
Soybean grain	bu	3.3	0.73	1.2	0.18
Soybean hay (DM)	ton	45	11	25	5.0
Soybean stover	bu	1.1	0.24	1.0	0.17
Soybean stover	ton	40	8.8	37	6.2
Sugarbeet root	ton	3.7	2.2	7.3	0.45
Sugarbeet top	ton	7.4	4.0	20	0.40
Sugarcane	ton	2.0	1.2	3.5	
Sunflower grain	cwt	2.7	0.97	0.9	0.25
Sunflower stover	cwt	2.8	0.24	4.1	0.6
Sunflower stover	ton	23	2.0	34	5.0
Switchgrass (DM)	ton	22	12	58	
Timothy (DM)	ton	25	11	42	2.0
Tomatoes	ton	2.5	0.92	5.7	
Tobacco leaves	cwt	3.6	0.90	5.7	0.6
Vetch (DM)	ton	57	15	49	
Wheat straw	bu	0.7	0.16	1.2	0.14
Wheat straw	ton	15	3.7	29	5.4
Wheat (spring) grain	bu	1.5	0.57	0.33	0.10
Wheat (winter) grain	bu	1.2	0.48	0.29	0.10

\* Nutrient removal refers to the quantity of nutrient removed from the field at crop harvest.

\*\*Reported nutrient removal coefficients may vary regionally depending on growing conditions. Use locally available data whenever possible.

\*\*\*DM = dry matter basis; otherwise moisture content is standard marketing convention or at the stated moisture content.

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**Example:** Using **Table 4.5**, an example of nutrient balancing would be a 200 bu/A corn crop removes 70 lb P<sub>2</sub>O<sub>5</sub> from the soil (200 x 0.35=70). So, the maintenance P<sub>2</sub>O<sub>5</sub> application will be 70 lb/A.

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