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AVERAGE NUTRIENT REMOVAL RATES FOR CROPS IN THE NORTHCENTRAL REGION

The following table provides average nutrient removal rates for field crops commonly grown in the northcentral USA. To use the values in the table, simply multiply the table value by the yield of the crop, making sure that the yield units match those in the table. For instance, to estimate the amount of K₂O removed by 200 bu/A of corn grain, multiply 200 by 0.27 to get 54 lb K₂O/A.

Crop	Unit	Removal, lb/unit ¹				
		N	P ₂ O ₅	K ₂ O	Mg	S
Alfalfa	ton	51	12	49	5.4	5.4
Corn grain	bu	0.90	0.38	0.27	0.09	0.08
Corn stover	bu	0.45	0.16	1.1	0.14	0.07
Corn stover	ton	16	5.8	40	5.0	3
Corn silage	bu	1.6	0.51	1.2	0.33	0.18
Corn silage	ton	9.7	3.1	7.3	2.0	1.1
Soybean grain	bu	3.8	0.84	1.3	0.21	0.18
Soybean stover	bu	1.1	0.24	1.0	0.22	0.17
Soybean stover	ton	40	8.8	37	8.1	6.2
Soybean hay	ton	45	11	25	9	5
Wheat grain	bu	1.5	0.60	0.34	0.15	0.1
Wheat straw	bu	0.7	0.16	1.2	0.1	0.14
Wheat straw	ton	14	3.3	24	2	2.8

¹Moisture for reported units is based on marketing conventions or on a hay or wet silage basis. Values are limited to Northcentral regional publications whenever possible.

Stover or straw values in the table are reported on a ton or a bushel basis. The bushel basis is used when the grain yield is known but the amount of stover removed is not. This value assumes that all of the stover is recovered during harvest. In reality, only a percentage of the stover is harvested. Therefore, if the bushel basis is used, the percent recovery must be factored in. For instance, assume 200 bu/A of corn is harvested and about 50% of the stover is removed later. First, if all of the stover could have been harvested from the field, the amount of K₂O removed would be 200 bu/A times 1.1 lb K₂O per bushel, or 220 lb K₂O/A. However, since only 50% of the stover was removed, we multiply 220 lb K₂O/A by 0.50 to get 110 lb K₂O/A. This is the amount of K₂O estimated to be removed by harvesting 50% of the stover remaining after a 200 bu/A corn grain crop.

Estimating nutrient removal helps farmers and advisers assess whether nutrient applications are exceeding or are falling short of what the crops take off when they are harvested.

Pocket-sized, field-ready cards containing this information as well as many more field crops may be ordered for US\$0.20 (20 cents) each by calling IPNI Circulation at (770) 825-8082, or e-mail: circulation@ipni.net.

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Abbreviations in this article: N = nitrogen; P = phosphorus; K = potassium; Mg = magnesium; S = sulfur.

Note: *Plant Nutrition TODAY* articles are available online at the IPNI website: www.ipni.net/pnt