IPNI
Plant Nutrition TODAY
Better Crops, Better Environment...through Science

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GET YOUR OWN NUTRIENT REMOVAL NUMBERS

How much of each nutrient is removed when I harvest grain? This is one of the most commonly asked questions in nutrient management. It is a key component of planning manure applications and calculating "maintenance" rates of fertilizer. The most common sources of this information are tables of standard values, which many university Extension services publish; however, you can generate your own values that are tailored to the hybrids and varieties you grow and the conditions in which you grow them. There are three basic steps.

Step 1. Take a representative grain sample. There are many good sources of information for doing it. One is the USDA Grain Inspection, Packers, & Stockyards Administration, and their procedures are found at http://www.gipsa.usda.gov/publications/fgis/ref/practical_sampling.pdf.

Step 2. Send your sample to a laboratory that has sound quality control and quality assurance programs. Often, the same laboratory you send your soil samples to will also analyze your grain.

Step 3. Convert the numbers you get from the laboratory to nutrient removal rates. This basically involves dividing the percentages you get from the laboratory by one hundred and multiplying by the pounds of dry matter in a bushel. To provide a quick reference, the table below combines those calculations into just one number that you need to multiply your lab results by.

For instance, if the laboratory reports that your corn grain sample contained 0.30% P, you locate the appropriate factor, in this case P (%) for corn is 1.084, and multiply that factor by the lab result: 0.30 x 1.084 = 0.33 lb P_2O_5/bu.

To convert:	to:	Multiply laboratory analysis by:		
		Corn	Soybean	Wheat
N, %	lb N/bu	0.4732	0.5220	0.5190
P, %	lb P_2O_5/bu	1.084	1.195	1.189
K, %	lb K_2O/bu	0.5678	0.6264	0.6228
Ca, %	lb Ca/bu	0.4732	0.5220	0.5190
Mg, %	lb Mg/bu	0.4732	0.5220	0.5190
S, %	lb S/bu	0.4732	0.5220	0.5190

Making a habit of taking samples regularly will build up a nice, personalized dataset that will provide you with nutrient removal numbers that are the most accurate for your set of conditions.

–TSM –

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Abbreviations: N = nitrogen; P = phosphorus; K = potassium; S = sulfur; Ca = calcium; Mg = magnesium.