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CROP NUTRIENT REMOVAL AND FERTILIZER USE IN THE NORTHERN GREAT PLAINS

The 2004 crop will remain a painful memory for some time with many northern Great Plains farmers. Spring snow, heavy summer rains, and delayed harvest provided the ingredients for a challenging and demanding growing season. In some areas, a dry spring and summer drought persisted for another year. In all areas a crop was harvested, removing large quantities of nutrients from the soil.

For most provinces and states, the annual phosphorus and potassium budgets are negative. A summary of crop removal and fertilizer nutrient additions (prepared in 2000 by the Potash & Phosphate Institute) showed that the negative balance varied across the northern Great Plains. The fertilizer applied, less crop removal, revealed that only Manitoba had a positive balance of 4 million pounds of P_2O_5 . All other states and provinces were negative, with Montana at 16 million pounds, Alberta at 59 million pounds, North Dakota at 86 million pounds, and Saskatchewan at 179 million pounds.

High soil potassium levels in the region result in an even larger negative balance. Fertilizer less crop removal values for potassium range from a low of 240 million pounds in Manitoba, to a high of 582 million in Saskatchewan. The abundance of plant-available potassium in most Great Plains soils is reflected in the large yields harvested this year, in the absence of potassium additions.

Recoverable manure nutrients do impact the nutrient balance. Estimated recoverable phosphorus and potassium in manure reduces the negative nutrient balance significantly in certain areas. Specifically, those provinces and states with large livestock populations have a large amount of recoverable nutrients for land application. The only problem in using these numbers in a regional balance is that such small areas of land actually see manure application. For example, the percentage of total land in annual crop and fallow that receives manure in Alberta and Manitoba is about 4.7%, while only 1.4% sees manure in Saskatchewan. As a result, these small areas receiving manure get lots of nutrients.

Tools are available to calculate your own farm nutrient balance. Crop removal values for phosphorus and potassium are available on-line for estimating your nutrient removal in 2004. Why calculate these removal values? First of all, this gives you some insight into what is being removed from your fields. Secondly, it provides some information on how your fields are doing relative to a nutrient input – removal balance. Used in combination with a soil test, you can monitor nutrient status and plan your soil fertility program for 2005.

See nutrient uptake and removal tables at ><http://www.ppi-ppic.org/ppiweb/canadaw.nsf><.

High yields are a result of responsible nutrient management. Balancing phosphorus and potassium inputs and removal, and using a soil test to establish the soil nutrient supply levels, form the basis of responsible nutrient management on the farm.

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For more information, contact Dr. Adrian M. Johnston, Northern Great Plains Director, PPI/PPIC, 12-425 Pinehouse Drive, Saskatoon, Saskatchewan, Canada S7K 5K2. Phone: (306) 956-0619. E-mail: ajohnston@ppi-ppic.org.