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THE CANADIAN PHOSPHORUS BALANCE

Nutrient balances are in deficit when more is removed by the harvest of crops than is supplied by fertilizers and manures. A recent phosphorus balance indicated that 71% of Canadian crop land was found in census divisions with a phosphorus deficit. Such widespread deficits call for attention!

Averaged over Canadian cropland, there is no phosphorus deficit. The amount removed by crop harvest is equivalent to about 95% of the amount applied as fertilizers and manures. But a closer look shows that surpluses in smaller areas are hiding deficits across larger areas.

Even in livestock-dominated areas like eastern Canada—Ontario, Quebec, and Atlantic Canada—34% of the cropland is found in census divisions with a deficit. For cropland in the prairies, the figure increases to 79%.

While a great deal of attention is being paid to areas with surpluses, deficits can also be a concern. When deficits deplete soil fertility, the long-term productivity of a soil can be impaired. This is why soil testing is an important component of nutrient management.

A good deal of the excess in areas of surplus arises from manure. However, it isn't easy to alleviate the deficits across census divisions using manure, because manures are costly to transport. The transport distance would often need to be across several census divisions, which on average may be more than 20 miles wide. Technologies to concentrate and transport manure nutrients are being developed – but not without cost.

Over the past thirty years, the amount of surplus phosphorus applied to cropland is trending downward. Much of the historical surplus contributed to the improvement of soil fertility, raising the soil test for phosphorus to the range where crops reach their optimum yield and quality without requiring application rates that exceed removal. But today's producers, under increasing pressure to manage nutrients efficiently, will need to pay attention to both deficits and surpluses.

Both surpluses and deficits entail risks. Surpluses risk harm to water. Deficits risk harm to the soil. Maintaining balance—minimizing both surpluses and deficits—balances risks.

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