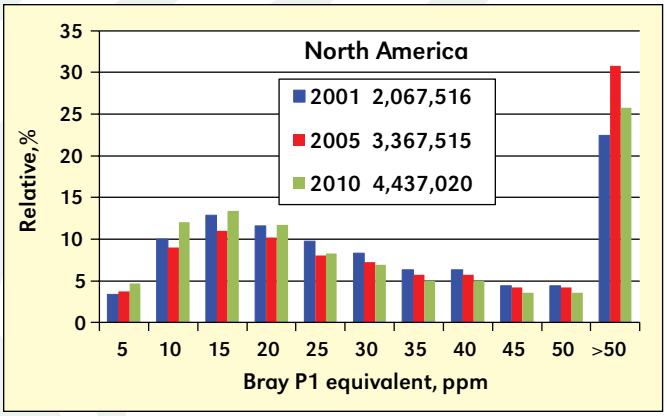
# The Fertility of North American Soils – Summary 2010

The 2010 IPNI summary of 4.4 million soil samples is probably the most comprehensive evaluation of soil fertility ever conducted in North America (NA). We said the same thing about the 2005 summary. Collectively, these two summaries examined nearly 8 million samples to offer a status report of one of the most precious natural resources of NA, its soil.

Submissions from laboratories indicate that use of soil testing has increased substantially since 2005. The 2010 summary gives a more complete evaluation of the components of soil fertility than previous summaries, providing information about phosphorus (P), potassium (K), sulfur (S), magnesium (Mg), zinc (Zn), chloride ($Cl^-$), and pH.

**Phosphorus.** The median P level for NA of 25 parts per million (ppm) indicates a 6 ppm decline from 2005. The region of most consistent P declines was the Corn Belt, which also experienced a decline of 6 ppm to a 2010 median level of 22. This decline has major agronomic significance since a high percentage of samples from this region now test below critical levels and call for annual P fertilization to avoid yield reductions. Soil P declines across the Corn Belt were correlated with P partial balances which were negative for the 5-year period for 10 of the 12 states. The Northeast continues to have some of the highest soil P levels in NA, usually associated with intensive livestock or vegetable production.




The median P level for NA (U.S. and Canada) declined from 31 ppm in 2005 to 25 ppm in 2010.

**Potassium.** The median K level for NA declined 4 ppm, an amount numerically similar to P decline – but at a median level of 150 ppm, the decline has much less agronomic significance. However, the current median is very close to what many recommendation systems consider to be an agronomic critical level for crop response. The western Corn Belt and much of the Great Plains and Northeast experienced significant soil K declines. Some of the apparent soil K changes are very likely due to factors other than nutrient management, such as weather patterns that can influence the equilibrium between soil test extractable and non-extractable forms of K.

**Sulfur.** The summary shows an increase in frequency of soils testing low in S, which is consistent with reports of increasing S deficiency in crops. Most scientists, however, do not consider S soil tests to be diagnostic without ancillary information, so agronomic interpretation strictly from the tests themselves is limited.

**Zinc.** With 37% of samples testing less than 1 ppm Zn, and 16% less than 0.5 ppm Zn, many soils in NA should be responsive to Zn fertilization.

**Chloride.** The Northern Great Plains has a high frequency of soils low in $Cl^-$.

**pH.** Soil pH changes, as in the past, were minor with a NA median of 6.4, compared to 6.3 in 2010.

We in North America rely heavily on soil testing to assess soil fertility and guide future nutrient management decisions. This summary demonstrates the extreme variability of fertility levels and that they do indeed change over time. Producers who have soils that have not been sampled recently would have much to gain by getting into the regular practice of soil sampling. The increase in sample volume with the 2010 summary is a positive sign that more farmers and advisers are taking advantage of this valuable tool.

More detailed information, including soil test frequency distributions for states and provinces for 2010, 2005, and 2001, will soon be available in the publication *Soil Test Levels in North America, 2010* and the accompanying CD, available for purchase from IPNI. Check the article beginning on page 6 inside this issue for more data, figures, and interpretation of the summary results. Visit the website at: >http://info.ipni.net/soiltestsummary<.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