

SOIL NUTRITION

TEST LEVELS TRENDS IN ALBERTA



BATTLE RIVER IMPLEMENTS

AGRONOMY UPDATE

FEBRUARY 2017



You may not be aware that there is an organization called the International Plant Nutrition Institute that, among other things, monitors fertilizer use patterns in the Canadian prairies. If you are curious about what the IPNI does, their mandate states that “The International Plant Nutrition Institute (IPNI) is a not-for-profit, science-based organization dedicated to the responsible

management of plant nutrition for the benefit of the human family. IPNI began operating in January of 2007 and now has active programs in Africa, Australia/New Zealand, Brazil, China, Eastern Europe/Central Asia and Middle East, Latin America-Southern Cone, Mexico and Central America, Northern Latin America, North America (Canada and U.S.A.), South Asia, and Southeast Asia.” You may be familiar with their efforts around the “4R Nutrient Program”, but they also have an interactive web site that contains a wealth of information about trends in fertility that can be accessed with this link; <http://soiltest.ipni.net/>.

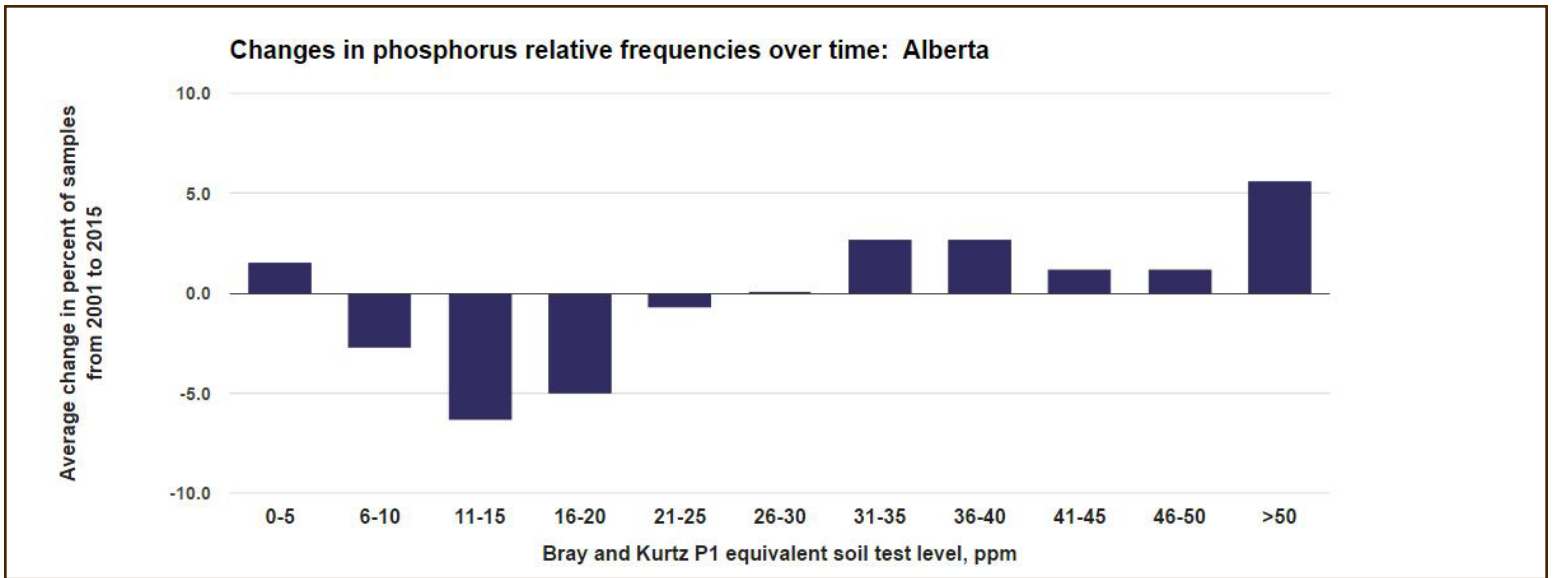
In a nutshell, what they are doing is a survey of soil test results from various labs that process western Canadian soil samples and try to pick up trends in nutrient usage. A couple of things to remember when looking at this data is that



it does not represent all samples done – the IPNI gathered data from 4 soil test labs for their 2015 survey for example, which they estimate represents about 75% of the soil testing done on the prairies in that year. Also keep in mind that these surveys are representative of fields

tested. We have no idea how representative they are of all the fields not tested, so the data set is most representative of those farm managers who regularly soil test and may also be biased by producers who are doing variable rate, as they will generate several samples on each field. But with that in mind, when you start adding up the data from the last 15 years, we can start to see some interesting trends.

On the following page is a graph which is an example of some of the information we can draw from the website. From it, you can see that while soils extremely low in P (0 – 5 ppm) has increased slightly over 15 years of surveying, most of the fields that are low in soil test P have actually decreased in frequency and those higher in soil test levels of P have been increasing. So this trend seems to be telling us that despite increasing crop



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production since the beginning of the century, overall soil test levels of P in Alberta are trending up. This could be interpreted to mean that most farmers are doing a good job of replacing the soil P lost during the production of the larger crops we've seen over the last few years. If you look at the bar on the far right, you can also conclude that a 5% increase in P levels above 50 ppm means that at least some producers are over applying – which means they are getting no return on the extra money spent and are actually putting these excess nutrients at risk for ending up in “non-target” areas. I'll show you in a minute that aggregated data such as that being generated by the IPNI can show more than 1 trend from the same data set - it all depends on what parameters you are using.

...overall soil test levels of P in Alberta are trending up.

While the overall trend line on soil test levels for P are increasing, there is also an increase in the number of samples that fall below critical levels. Well over half the samples in 2015 fell into this category. So while the data shows we have an increase of the samples at the high end of the range, there is also an increase at the low end. So it seems there are some producers over applying P and another group who are mining their soil. Now you may want to have a different nutrient plan for rented land as opposed to owned land, but you need to be aware of how many nutrients in general are leaving the field as compared to how much you are adding. This is easy enough to check with soil testing or by a simple calculation of how much P (and all other nutrients) is leaving the field with harvest through an entire crop rotation on that field. A properly calibrated yield monitor will document all of this information for you. If nutrient leaving the field with the crop exceeds the amount of nutrients added in your fertility program, you may want to adjust that plan now to avoid large input costs down the road to correct a critical problem.

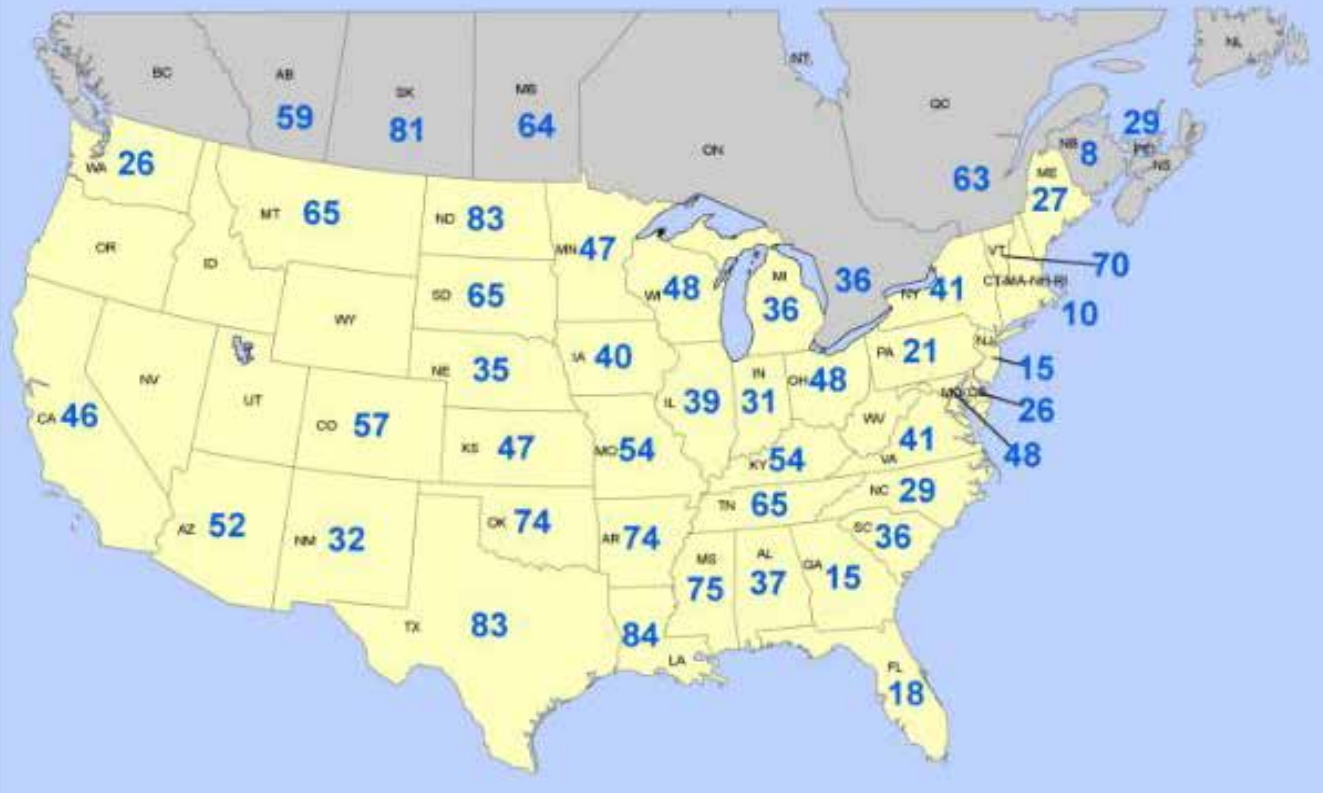
Another interesting report that can be derived from this data pertains to the percentage of samples being submitted that are showing nutrient test levels below “critical levels”. IPNI defines critical levels as any situation where crop yield will suffer if no additional amount of the nutrient in question is added. This report shows a few things that may surprise you. In following pages, I have included the maps for the percentage of fields below critical level for Phosphate, Potash and Zinc based on the 2015 survey. What I haven't included are the results from previous surveys that show that the numbers of samples below critical level on all nutrients are actually increasing. There are 2 things you should be considering when you look at this data.

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The second thing I hope jumps out to you when you look at these maps is that the percentage of samples below critical levels on potash and zinc challenges a couple of assumptions that are widely held in east central Alberta.

- 1. We have lots of K in our soils and we don't need to add any more in our blends except maybe for malt barley.** This may be true for many of our soils, but I also have customers whose soil test results often call for 30 lbs or more of K per acre. Know what your soil test levels are!

Percent of Samples Testing Below Critical Levels for P in 2015



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Percent of Samples Testing Below Critical Levels for K in 2015



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Percent of Samples Testing Less Than 1.0 ppm DTPA equivalent Zn in 2015



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2. Other than copper, we have few real micronutrient deficiencies in Alberta soils.

For the most part this runs true in our area, but the fact that 30% of samples submitted were below critical levels in zinc surprised me. We have had several years of larger than normal crops pulling nutrients from the field, which changes our nutrient use patterns. Moisture is still our number 1 limiting production factor, but I am seeing increasing numbers of soil test results that show if we have adequate moisture and heat units, micronutrients such as copper, zinc and boron are starting to creep into equation as factors that need to be considered if profits are going to be maximized.

So to wrap this all up, I believe that groups such as the IPNI provide an invaluable service by taking aggregated data that you can use as a benchmark when you are deciding on a nutrient program. It tracks nutrient level trends that can point to potential issues down the road and allow you to adjust what you are doing before it becomes a problem on your own farm. I have only been able to touch on a couple of highlights that caught my eye as I was going through the reports, but I hope I have given you a little insight to the amount of information

available and some ways that you can use it as a management tool. As always if you have any questions or comments, feel free to contact me.

Wayne Spurrill, P.Ag
Agronomist
Battle River Implements
www.briltd.com
wspurrill@briltd.com

Cell: 780-761-1616
Office: 780-672-4463

To subscribe or unsubscribe, please email us at
mhafso@briltd.com