WARDletter

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Straight From The Field:
Observations From the '09 Growing Season

As Dr. Ray Ward gazed out his office window over a barren corn field dressed in winter white across the road from Ward Laboratories, he paused and said this past year's cool summer, with some areas getting plenty of rain and others none, made for an interesting growing season.

And, with the interesting season, Dr. Ward made some observations important for producers now and next spring.

- While analyzing some Great Plains wheat plant samples, Dr. Ward noticed that many of the samples were low to deficient in phosphorus and low in magnesium.

  Dr. Ward said the low phosphorus may be attributed to the dry spring or cooler temperatures, or it may be due to higher phosphorus costs where producers elected to apply less phosphorus to reduce input costs. In either case, Dr. Ward said, producers may need additional phosphorus for the 2010 spring planting.

  Magnesium problems seen in wheat samples are most likely caused by high potassium in the soil. Dr. Ward explained that magnesium levels in the soil may be adequate for wheat, but high potassium concentrations keep the plant from getting enough magnesium.

  To correct the problem, Dr. Ward says wheat producers can apply Epsom salts (magnesium sulfate) and water to the plant as foliar - two to four pounds of Epsom salts to 10 gallons of water can be applied right now to alleviate the problem.

- Dr. Ward says he also observed that some manure applications were slow to mineralize because of the dry conditions in some parts of the Great Plains. This slow mineralization created some nitrogen deficiencies. Dr. Ward said it is critical to have a soil nitrogen test this fall to see if late summer and fall rains enhanced mineralization adding nitrate for next year's crop.

- Finally, Dr. Ward said the seemingly taller corn this season requires a further look after harvest. This summer, "really large factories of corn were being built" Dr. Ward explained. And as these large factories began to fill the ears, there simply wasn't enough nitrogen available to finish the job. So, the plant stole nitrogen from lower leaves to make up the deficiency. As a result, some late season nitrogen deficiencies in corn were found. Dr. Ward went on to say that if producers don't see some type of deficiency in lower leaves, then probably too much nitrogen was applied. Conversely, if the deficiency in nitrogen is below the ears, there is probably no yield loss.

  For future corn crops Dr. Ward recommends a stalk nitrate or grain protein content analysis to confirm adequate nitrogen.

Raymond C. Ward, Ph.D.
President

Jolene F. Ward, B.S.
Corporate Secretary

Inside ...

Do We Really Want Organic Farms?

By Dr. Ray Ward

I was raised on an "organic farm" and really didn't know it until much later in life. Our family moved to Western, Nebraska in 1949. We tried some fertilizer a couple of years later, some 7-7-7 at 100 lbs., with no results. We also tried our first weed killer in '51 but prior to that we simply cultivated the hell out of the land 3-4 times a season, used manure from the barn and worked our butts off and had no money … we were organic farmers.

I reflected on our farm in Western, Nebraska as I read an article recently in Nebraska Business Digest by Dennis T. Avery, director Center for Global Food Issues who questioned whether or not organic farms are desirable. Avery said organic farming from yesterday didn't produce very good results … I agree with the writer.

Consider …

… organic farming in 1900 featured frequent food shortages worldwide since farming without chemicals never supported even one fourth of the population. Couple that with heavy plowing, which pushed into steeper and steeper ground to meet growing demands, causing erosion of soil to levels triple today especially in drought risky areas. Without pesticides, trillions of pests mowed the ground of all vegetation for miles compounding the problem.

… The 1930's dust bowl is partially a result of organic farming as well. Farmers over the years literally used up all the nutrients left by the manure of long departed buffalo herds. Without commercial fertilizer or adequate manure from cattle, the organic matter "holding" soil particles together disappeared leaving soil defenseless against rain and wind. "Black blizzards" that rose miles into the sky were the results.

… Worldwide organic farmers have created even bigger problems. Dependent on monsoons, India was never able to supply enough food to support its population because of the inability to grow a crop, and build reserves, during all to infrequent rains. During WWII Japan invaded a Chinese province to supply more cropland to feed their growing population. Danube Valley lands in Germany that were coveted by Hitler now produce surplus food thanks to today's technology. In Rwanda as late as 1994 two tribes literally killed off their neighbors for crop-quality land when in reality some commercial hybrids and fertilizer would have supplied both tribes with plenty of food.

So, organic farms may be okay for backyard tomato vines and rows of radishes, but all-organic techniques can't support our population with a sustainable food supply. Producers in the United States have been and continue to be good stewards of the land through tillage practices, fertilizers, pesticides and herbicides … and they will continue that stewardship for years to come while insuring a safe and plentiful food supply for the world.

Have You Thought About Carbon?

When visiting about plant nutrients we normally think about N-P-K, sulfur and zinc. There are others that we do not consider most of the time, yet all of our important to our production needs. One nutrient we are beginning to talk about more and more is carbon. Surprisingly, carbon concentration is much higher than any other nutrient besides oxygen. Plants take carbon dioxide out of the air along with water and sunshine to make sugar (glucose) by the process called photosynthesis. We have known for a long time that greenhouse operations have added carbon dioxide to increase plant growth. How could we replicate that process in the field? Maybe not very successfully, but we know that carbon dioxide is the end product of residue decomposition. Imagine having the decomposition occurring while the next crop is growing so it could be used to benefit the crop. The carbon dioxide would be coming from the soil to feed the crop. Tillage is used to decompose residue. All of that plant food (carbon) is released before the next crop reaches canopy. How much could we increase yield if we left the residue on the soil surface so it would decompose next summer when we have crop canopy? Plant growth is enhanced in green houses partly because carbon dioxide is added and I believe we can add more carbon dioxide to our fields through decomposing plant residue.

Revisiting Soil Sampling Techniques

In a chapter of the book "Fertilizing for Irrigated Corn", Kansas State University Extension Soil Specialist Dr. Dale Leikam stresses that collecting a good soil sample can not be overemphasized.

With that in mind, Dr. Leikam offers some suggestions regarding sampling that bear attention.

Dr. Leikam begins by stressing the need to get representative samples from a given field because of variability in the field. He said it is necessary to get 15-20 individual sub-samples from a field regardless of the acreage represented by the sample. And, at minimum, Dr. Leikam said, a separate composite sample of 15 -20 sub-samples should be gathered for every 40 acres. Grid sampling's importance is reinforced through the use of this technique.

Secondly, the chapter discusses the importance of depth of sampling stating it should be consistent from year to year and person to person to insure consistent sample results. Proper sampling depth for soil pH, organic matter, phosphorus, potassium, zinc, etc. should be 8". Misleading results will occur with sampling depths different than 8". Nitrate, chloride, and sulfate should be tested to a depth of 24", Dr. Leikam suggests. In Nebraska, Natural Resource Districts require nitrate testing to 36".

Once samples are obtained (use plastic buckets for collection) handling of the samples requires some diligence. When nitrate and/or sulfate results are sought, the samples should be delivered to the laboratory as quickly as possible to avoid microbial mineralization of organic nutrients. Spreading out samples to air dry overnight or freezing the samples is important if the samples cannot be sent to the laboratory immediately.

Dr. Leikham's article says there are a number of quality agricultural laboratories offering stringent quality control standards that make chances for error relatively low in the Great Plains. Ward Laboratories, Inc. participates in a number of proficiency programs to enhance and insure quality.

Once the actual soil analysis has been completed, knowing what the results mean becomes critical. The expertise and knowledge of a well established laboratory and its personnel is important. For potassium (K), zinc (Zn) and phosphorus (P), the results generally provide the ability of the soil to supply the nutrient to the crop, not a given amount of the nutrient in the soil. For P, K and Zn, the results provide an estimation of an economical benefit if the nutrient is applied to the crop. Secondly, the results provide a long term estimation of the percent of maximum crop yield if the nutrient is not applied. Despite widespread belief, the soil analysis results do predict a specific rate of P, K or Zn that needs to be supplied for optimum results.

Conversely, nitrogen, sulfur and chloride test results do estimate the actual amount of plant-available nutrients. Since $N0_3$, N, Cl, $S0_4$-S are mobile in soil water it is critical to test at root zone depths (to 24" or 36") than non-mobile nutrients like P, K and Zn.

Dr. Leikham concludes by saying that sound corn production fertility depends on a comprehensive soil testing program utilizing appropriate procedures plus long term research and knowledge that produce an efficient and profitable fertility program.

Setting realistic yet aggressive field by field yield goals is an important part of the process as well.

News Flash!!!

Cheaper Soil Testing
From Ward Laboratories

The new Inductivity Coupled Argon Plasma (ICAP) testing equipment being utilized now by Ward Laboratories, Inc. means faster, better and more reliable soil test results.

And, according to Ward Marketing Manager Al Baker, the new equipment will mean lower prices on some soil tests in the future as well. Baker explained the new equipment allows Ward professionals to run more complete tests, less expensively, spurring the future price reductions on some soil tests. Baker said the Ward Laboratories' professionals are pleased to pass along the savings to their customers.

Be watching for details on how Ward Laboratories will deliver the best possible analysis of your soil, with the fastest turn around time and at less expense to you.

www.wardlab.com