

TRI-BASIN TOPICS

Fall 2006

Volume 20, Issue 3

“Dedicated to the Conservation of our Natural Resources”

ABC's of Nitrogen Management

By Dr. Ray Ward, Certified Soil Scientist

In a producer's hectic world of constant deadlines, fast paced technology and rapidly changing environmental conditions, it seems appropriate, every now and then, to step back for a second, slow down a hair and take another look at some of the most basic components of agricultural production.

With that in mind, let's take a moment for a quick refresher course on nitrogen management with the goal of enhancing your production decisions as spring planting approaches.

Discussion about fertilizer management would begin with the cost of N since it is one of the most expensive, yet most important production inputs. To begin, one must know the amount of N in the type of fertilizer you utilize...82% N in anhydrous ammonia, 46% N in urea, 28-32% in UAN and 21% in Ammonia Sulfate.

The next step is to determine pounds of N in a ton of fertilizer. For anhydrous, multiply .82 (the amount of N in anhydrous) x 2000 (ton of anhydrous) which results in 1,640 of N per ton. If your current cost for a ton of ammonia is \$550, simply

divide the \$550 by the 1,640 lbs. resulting in a cost per pound of N of 33 cents.

Since the cost of fertilizer is a major input to production agriculture, it's critical to maximize its use. To best utilize your fertilizer, soil samples need to be analyzed to determine the amount of N that is present in your soil. Soil samples should be taken from 0-8 inches and from 8-36 inches to get an accurate read of your N needs. Soil samples to 36" deep measure residual nitrate in the root zone. The nitrate present in the root zone is as good as N fertilizer.

Once the nutrient value of your soil is determined, calculations can be made to determine the amount of fertilizer needed to maximize your yields. A good rule of thumb is 1.2-1.3 pounds of N is required per bushel of yield for corn and milo, wheat requires 2.0-2.4 pounds of N to produce a bushel.

It is also important to include an application of phosphate to maximize yields. A Tribune, Kansas study of corn yields since 1961 (see table below) clearly illustrates the importance of phosphate with well calculated nitrogen applications.

Nitrogen in lbs. Per Acre	2004 Corn Yield, Bu/A Without Phosphorus	2004 Corn Yield, Bu/A With Phosphorus*
0	67	97
40	92	148
80	118	209
120	103	228
160	136	231
200	162	234

*Phosphorus = 40 lbs. P₂O₅/A per year since 1961.



Managers Message

By: John Thorburn

Elephants on the Plains

I read with interest a recent proposal from professors at Cornell University to “restore” the Pleistocene-era ecology of the Great Plains. They propose to populate the Plains with elephants, camels, tortoises and lions. I don’t think that this idea of a “Pleistocene Park” is any more likely to catch on than the “Buffalo Commons” proposal of a decade ago. It can, however, serve to remind us what a dramatically different place Nebraska was just 12,000 years ago.

When scientists speak about an era thousands of years in the past, most people quickly lose their perspective of time. The Pleistocene epoch (from 1.8 million years ago up to 12,000 years ago) was a long time ago when we think of it in terms of human years. The United States as a nation is just 230 years old. The entire record of written human history spans little more than 5000 years.

Yet we need to keep in mind that our planet Earth formed about 4.5 billion years ago. Vertebrate animals emerged at least 500 million years ago. The dinosaurs went extinct and the Rocky Mountains began to rise out of the Mesozoic seas 66 million years ago. Human ancestors roamed the Earth at least 2 million years ago. Speaking in geologic terms, 12,000 years in the past is just a blink of an eye.

If we were able to travel back in time just as far as that geologic “blink”, we would be startled by how different central Nebraska was then, yet we would also recognize many things. Starting with the land itself, we would be standing in a mix of pine forests and grasslands. The Platte River would be many times its present size, swollen by glacial meltwater from the Rockies, but it probably wouldn’t be much deeper than it is now. The Platte roamed all across Nebraska during the Pleistocene, laying down sand and gravel beds that are the repository of much of our groundwater, but by this time it would have followed something like its present course west of Kearney. Instead of turning Northeast at Kearney in the familiar “big bend”, however, it continued southeast, joining the Republican River somewhere near present-day Superior, Nebraska.

The forests and swollen river reflect a cooler, wetter climate. Central Nebraska was never covered by glaciers like the eastern part of our state, but at times it had a harsh, tundra climate similar to the North Slope

of Alaska. By this time, however, the glaciers were in retreat and the climate would be more like central Saskatchewan with long cold winters, yet mild summers.

As we look at the animal life along the banks of the Platte, we would see the familiar and bizarre side-by-side. Migratory birds such as cranes, ducks and geese have utilized the Platte as a stopping point for millions of years. At the end of the Pleistocene, they might have roosted in a backwater beaver pond. They would have been joined in the pond by moose, elk and musk oxen. There would be predators like grizzly bears, dire wolves, saber-toothed tigers, perhaps even Native American hunters stalking around in the weeds. Most animals would give wide berth to the proprietors of this pond. Pleistocene beaver grew eight feet long and weighed as much as 450 pounds. Their front teeth were six inches long.

Giant beaver are just one example of the “megafauna” of the Pleistocene. They were joined by



mammoth (10 to 14 feet tall) and *Bison Antiquus*, large, extinct bison with horns six to eight feet across. One of the most curious creatures that we would be likely to see would be a Giant Sloth. These slow-moving herbivores grew up to 20 feet long, with 12” long claws.

The Pleistocene Epoch is part of our very recent geologic past. Nonetheless, our environment has changed substantially since then. Much as we might like to turn the clock back, importing elephants and lions won’t bring the Pleistocene Epoch back to the Great Plains. You can go down to the banks of the Platte today, however, and see how an imported species can radically change our environment in the blink of an eye. The once open, sandy riverbed is now choked with tall, dense stands of *Phragmites* grass. I doubt that even elephants could stop the glacial, but unrelenting advance of this “mega-grass”.

Water Use Reminder

Water use reports for wells in the Republican Basin will be mailed out in October and will be due in November. Don't forget to take a final reading from each meter for your water use reports!

Crop Reports Due

Crop reports for the 2006 crop year will be due by December 31, 2006 for producers in Phase II and Phase III of the Tri-Basin Groundwater Quality Management Area. The reports need to have correct ID numbers as well as the results of water and soil samples taken before the 2006 crop was planted. If you need reporting forms, please contact the Tri-Basin NRD office.

New Tri-Basin NRD rules are in effect for producers in the Phase III area, including restrictions on fall fertilization. If you are unsure if your ground is in Phase III area or if you have questions about the new rules, contact the Tri-Basin NRD office.

Also, remember to take your soil and water samples either this fall or in early spring for your 2007 crop reports.

New Prices for Flags & Trees

Tri-Basin NRD has established new prices for our flags, trees, drip tape and mulch. Prices are now:

Trees.....	60¢ each
Drip tape	27¢ per foot
Mulch	32¢ per foot
Flags	\$6 per bundle
Flags	\$60 per box



Tri-Basin Board members and staff had the opportunity to walk part of the Larry D. Roper Trail at Johnson Lake while on the 2006 Board of Directors tour.

2006 Board of Directors Tour

Tri-Basin NRD Board members and staff toured southern Phelps County and Gosper County on August 8. While some stops were cancelled because of much needed rain, the morning was still filled with information. In Loomis, they heard about and saw the construction of Agri Cop's new dry fertilizer plant. They then traveled to Johnson Lake where they saw the Larry D. Roper Trail for hiking and biking through the Johnson Lake park area. Also at Johnson Lake, Larry Ossenkop discussed the lake's new sewer system and Dave Ford of Central Nebraska Public Power and Irrigation District explained their use of Johnson Lake and Elwood Reservoir. The tour ended in Bertrand with lunch at Turkey Creek Restaurant. The Tri-Basin NRD Board meeting was held at the Bertrand Village Office.



Tri-Basin Conservation Technician Roger David and wife Mandy welcomed a baby girl, Reese Ellen, on May 19, 2006.

Check out these web sites:

<http://www.epa.gov/OW/you/chap3.html>
http://www.cnppid.com/Elevation_Flows2.htm
<http://tribasinprd.org/domesticwatertest.html>
http://www.dnr.state.ne.us/dnrnews/news2004/summer2004_sm.pdf
<http://www.websoilsurvey.nrcs.usda.gov/app/>
http://net.unl.edu/swi/pers/water_worries.html

-Effective Water Use
-Reservoir elevation & Platte River Flow
-Domestic Nitrate Testing
-LB 962
-Determining soil type
-Nebraska Reservoirs



CALENDAR OF EVENTS

(All meetings are at NRD office in Phelps County Ag Center unless otherwise noted.)

September

- September 4 - Labor Day (Office Closed)
- September 12 - NRD Board Meeting at 7:30 p.m.*

October

- October 9 - Columbus Day (Office Closed)
- October 10 - NRD Board Meeting 7:30 p.m.
- October 11 - Land Judging Competition

November

- November 14 - NRD Board Meeting at 7:30 p.m.*
- November 23, 24 - Office closed for Thanksgiving holiday

* Times are tentative

WATER CONSERVATION TIP

- Direct water from rain gutters and HVAC systems towards water-loving plants in the landscape for automatic water savings.

TRI-BASIN TOPICS is a publication of the
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A mailing list is maintained and requests to be placed on the list should be sent to the above address. Comments and suggestions may be addressed to the General Manager.

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*Republican Basin Meter
Inspections

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