

ORTHMAN ADVOCATES PLACING FERTILIZER FOR BETTER CROP HEALTH AND YIELD

BY: Mike Petersen, Lead Agronomist – December 2013

Fertilizers are so well known to improve yield potential. Since WWII, farmers have applied commercial and/or organic products to grow crops. Research has proven beyond a shadow of doubt that additions of nutrients before and during crop growth yield multiple times better than without. Over the last 60+ years we have seen yields in corn more than quadruple in yield, now to over 160 bu/acre or 10.4T/ha.

In more recent studies as many of you have read in trade magazines, seen for yourselves, heard at conferences or field days that broadcast fertilizer methods are not always the best bet for your fertility programs. Runoff issues, hypoxia in the Gulf of Mexico or Chesapeake Bay, algae growth in Lake Erie, contaminated water supplies in surface supplies and wells, numerous cities concerned about their supplies due to N runoff or subterranean flows – all of these issues are aimed at less than stellar Agricultural use. Research is demonstrating we have better methods of fertilizing commercial fertilizers as well as organic products by getting those nutrients in the ground with either deep banding or strip-tillage.



Pre-plant nutrient placement with itRIPr

Stepping into tillage research efforts, we at Orthman also are studying the effect of precision placement of N-P-K-S and others right at the Orthman Research Proving Grounds near Lexington, Nebraska. We have partnered with 16 other institutions to carry out cooperative research across the United States and 8 of these are looking closely at fertilizer placement.

In my research reading I came across findings from the University of Missouri-Columbia (P.R. Nash et al 2013) they said with pre-plant strip-tilled polymer coated urea products applied, showed significant yield response in corn 12 to 14% over non-coated urea. Furthermore the Missouri researchers observed strip-till precision placement methods increased yields 26 to 36% over broadcast applications of the coated and un-coated urea products. They noted that strip-till placement of polymer coated urea products could offer a solid option as a fall applied N compared to anhydrous ammonia for growers.

Scientists at the University of Illinois (Fernandez, Schaefer and Greer) conducted studies (2007-2010) strip-till compared to Direct Seeding and broadcast systems of fertilizing of corn and reported in 2012 that yields improved by 13 bu/acre when precision placement was accomplished in the same location multiple years. The strip-tilled deep placed N-P-K averaged for the years 2008 and 2010 7bu/ac more than the No-Tilled corn. With their studies they did not see a significant yield result due to the interaction of tillage and placement; they felt it was due to a tillage effect. In the odd years (2009 &

2011) they rotated into soybeans and saw a small increase of 2 bu/acre with strip-tilled deep placed N-P-K compared to a No-Till system.

Another review research paper in the Journal of Agriculture and Allied Sciences, "Placement of Nutrients in Soil: A Review"(Radika, Hemalatha, Maragatham, and Praveena) wrote that from multiple research projects showed precision of deep placed phosphorus/potassium products increases early to mid-season growth in maize but no significant yield response in grain with soils high in potassium. Their research determined that several field studies are finding that crop health, leaf tissue analyses show P & K concentration is up with deep placed nutrients but no statistical significant yield bumps. These same researchers noted in their findings of a Canadian journal that deep banding of K did offer great yield benefits for grain sorghum.

Dr. Vyn at Purdue University has reported recently (2012) that deep banding of K in Strip-Till does give yield response compared to deep banding in mulch tillage (chisel-disk system).

Our (Orthman Manufacturing) field research in continuous corn plots show that 2009 through 2013 with deep banding N-P-K-S-Zn we are improving yields compared to No-Till banded shallow, as follows: 2009 ST 13 to 19% better yield than No-Till, in 2010 ST 7.5% to 19% above NT, 2011 ST was 6 to 18% improvement over NT, in 2012 ST was 5 to 17% better yield than NT, and in 2013 we were 4 to 11.5% higher yield than NT. In continuous irrigated corn we are consistently improved with deep, precision placed nutrients for the past 5 years. It is our observation and studies that tell us there is a tillage and fertility interaction with the silty clay loam soils of South Central Nebraska.

We believe accurate and positive placement of fertility, especially phosphorus and potassium offer ingredients for yield improvement, cost savings, and more. Our methodology is to apply a prescription based N-P-K-S-Zn package in two locations below the seed. Return with RTK guidance over the strip with an "in-furrow" at planting time, low salt high quality product of N-P-K-S and micros to set the plants potential at a higher plain. The more I just spoke of; a larger root mass developed, better distribution of soil organic matter, better nutrient efficiency of the plant on the whole due to generally soils are moist longer during the growing season, and more capacity to feed the photosynthetic factory which results in grain yield. We know most growers see it all about the top yield when they purchase and apply nutrient products, we think it is more than just that. Did you spend your money wisely and get the most out of the products you applied? Our team at Orthman Mfg. believes positioning the nutrient package has so much potential to drive yield up compared to the older method of broadcast. We submit, knowing that roots grow downward, pulled by gravity, warming soil temperatures, and moisture levels in the soil profile all demand a closer look and thought process how we should feed our crops.

This year of 2014 right before us can be the year we all fertilize with a better precision mentality. Look into placement, the process works.

References:

Radhika, Hemalatha, Maragatham & Praveena, 2013. Placement of Nutrients in Soil: A Review., Journal of Agriculture and Allied Sciences, Vol.2, Issue 2, April-June 2013

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