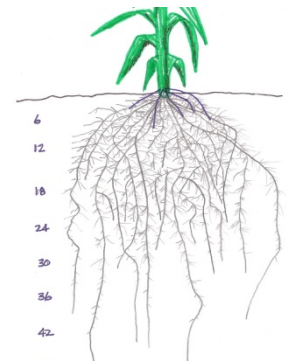


Orthman Research Looks at Precision Placement of P & K with Strip-Till

by: Mike Petersen, Agronomist



Future Considerations of K Fertilizing in a Deep Banding Operation that affects Corn Rooting



55 day old root system in the Western Corn Belt

Precision guidance via the use of RTK offers to the American grower a reliable way to apply N - P - K fertilizer products and get it right to where the roots will grow and access nutrients.

Murrell and Vyn reported in a recent article written in *Better Crops with Plant Food*, pg. 24-25, Vol. 94, 2010 No. 4, "that higher soil test P and K levels near the surface in reduced tillage systems appears to be among the list of possible factors altering corn root distribution in the soil profile". These writers went on to note, after a 25 year study of N-P-K applications in bands 2X2 from the seed row by Duiker and Beegle, 2006 saw only slightly enriched K zones next to the row under chisel/disk tillage systems. In this study no-till and moldboard/disk systems were also compared. It was explained that no enriched zone was found where starter with N-P-K was applied as a starter in those two tillage systems. But in all three tillage systems P was concentrated in zones right under the row.

In Iowa, Mallarino and Borges (2006) banded K at depths of 5 to 7 inches deep in spring operations at a rate of 70lbs K₂O per acre per year for four years in a row. Enriched zones at the depth of 2 to 6 inches were measured with soil tests consistently. Dr. Vyn reports that in a recent study in Indiana in strip-tilled corn following no-till soybeans, higher K concentrations in the corn row were measured even with K applied both broadcast and banded deep. This study estimated K returned via the remaining stover and leaching into the soil. Vyn goes on to say, "the amount of K estimated to be redistributed in the soil by the root system could be 72% as much as what was removed by the grain". Could this be one of the real benefits of strip-till, properly making P&K available in precision bands and plants becoming more effective in their absorbing nutrients and yes, storing K in the root crown and stalks? I pose that question because of what is being reported by researchers could be challenging us all to consider P & K use and amounts we apply. Dr. Vyn and his associates are proceeding to determine more about fertility placement, banding and the results that can cause higher concentrations in the row.

From our fertilizer placement work at the Orthman Research Farm we are observing that our remaining K soil tests show we are too getting higher concentrations in the row. We feel as though we gain subsequent years by moving back right into the row of corn where we will strip-till and plant by moving 15 inches each year in 30 inch row systems. We also have observed that in 5 years of corn-on-corn that our K levels have changed only 2 meq/L and we have been applying K with the strip-till tools and with our planters with starter products with a portion of K. This thought process that Vyn and Murrell suggest makes a lot of sense.

The Future.....

Orthman Manufacturing is continuing to partner with several researchers around the U.S. to look at fertilizer placement and the strip-till system to raise row crops. With a focus to be in the precision side of farming, it is a goal to see N-P-K products applied smartly under the plant so uptake is more of a guaranteed item rather than the plant maybe reaching the material and getting it in time for the physiological needs of the plant. It is thinking along these lines that will get the right hybrid, precise placed fertilizers, top notch management of weed control and water management that will gain farmers those sustained higher yields. We are convinced that a larger share of P&K and micronutrients precisely placed will get corn farmers well on the way to 300 bu/acre goals.

This is all dependent upon the sun, rainclouds being generous but not overflowing, adequate heat during the growing season without scorching the crops and growers total management of all his resources that works together. We at Orthman are committed to precision tillage and placement. We are seeking in our field work of root digs, better quality fertilizers, combining efforts of seed companies, corn breeders, irrigation to put the picture-puzzle together as best as we know how. Keep watching how the 2011 season pans out.

References and Acknowledgements:

Dr. Murrell is Director, IPNI North Central Region, North American Program

Dr. Tony Vyn is Professor of Agronomy, Purdue University

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