Early 2010 Root Observations in Central Platte Valley-Nebraska
Orthman Compares Strip-Till vs. Direct Seeding Rooting Expansion and Growth

For those growers really looking to maximize profits with top yields in continuous irrigated corn, pre-plant tillage operations have much to say whether or not the crop will take off and develop a good footing for the rest of the growing season. It has been a number one objective of ours here at Orthman Manufacturing to have a sound grasp on the foundation of the corn we farm and advocate others to farm. This short paper is to give you a rundown on what has transpired so far this wet year in Central Nebraska in our strip-tilled corn acres.

The week of June 14-18th, 2010 we conducted 25 days after emergence root digs to determine the development of the root profile for numerous corn varieties and tillage comparisons. We want to show you a portion of those 80 some digs where strip-till is being compared to corn varieties that are 104 RMD to 109RMD, suppliers of the seed are also looking at known weaker rooting systems compared to strong root systems. AS the seed corn suppliers are looking for ways to take these varieties and find the right niche where they can still produce high yields and decent profit margins.

Table 1. No-Till Continuous Corn Comparison Plots – Direct Seeded Hoegemeyer 108 day length corn variety hybrid is known to have a strong root system

Plant 1 Hoeg 108RMD Strong Rooter	Plant 2	Plant 3	Plant 1 Hoeg 108RMD Strong Rooter	Plant 2	Plant 3 No-Till	
7	7	7	9	10	9	Primary Roots(incl.seedling+1st node)
6	8	8	8	8	10	2nd Nodal Roots
8	10	10	8	10	10	3rd Nodal Roots
4	4	4	8	6	6	4th Nodal roots
16	18	18	22	20	22	Plant Height (inches)
12	14	15	15	16	14	Root Depth(inches)
7	8	8	8	8	8-9	Leaves(no.)

Table 2. No-Till Continuous Corn Comparison Plots – Direct Seeded Hoegemeyer 108 day length corn variety hybrid is known to have a weak root system

Plant 1 Hoeg 108 RMD weak rooter No-Till	Plant 2	Plant 3	Plant 1 Hoeg 108 RMD weak rooter Strip-Till	Plant 2	Plant 3	
8	8	8	7	7	8	Primary Roots(incl.seedling+1st node)
9	8	10	8	8	10	2nd Nodal Roots
8	6	7	8	8	8	3rd Nodal Roots
4	5	3	3	6	7	4th Nodal roots
17	18	19	22	22	21	Plant Height (inches)
15	16	18	13	13	14	Root Depth(inches)
8	8	8	8-9	8	8	Leaves(no.)

Table 3 & 4. Strip-Till vs. Direct Seeding Corn with Excell Hybrids. Plant height and number of 3rd nodal, 4th nodal root sets and root totals indicate plant rooting capabilities even at this young of stage with Strip-Till giving a small edge.

NW-SE Row Direction Plots Excell Hybrids Strong vs. Weaker Rooting **Strip-Till Plots**

Plant 1	Plant 2	Plant 3	Plant 1	Plant 2	Plant 3	Plant 1	Plant 2	Plant 3	Plant 1	Plant 2	Plant 3	
Excell Strip-Till 104RMD			Excell Strip-Till 109RMD			Excell Strip-Till 105RMD			Excell Strip-Till 108RMD			
Strip-Till w/PPF&IF			Strip-Till w/PPF&IF			Strip-Till w/PPF&IF			Strip-Till w/PPF&IF			
7	7	7	7	7	7	9	7	7	7	7	7	Primary Roots(incl.seedling+1st node)
8	9	9	8	8	8	8	8	8	8	8	8	2nd Nodal Roots
8	8	10	8	8	10	8	8	9	10	10	8	3rd Nodal Roots
3	3	6	4	2	3	2	2	3	8	6	5	4th Nodal roots
18	19	20.5	19	20	21	24	21	22	19	21	21	Plant Height (inches)
14	15	14	14	13	13	16	14	16	16	15	15	Root Depth(inches)
7-8	8	8	7-8	7-8	7-8	8	8	8	7-8	8	8	Leaves(no.)

N-S Row Direction Plots Excell Hybrids Strong vs. Weaker Rooting **No-Till Plots**

Plant 1	Plant 2	Plant 3	Plant 1	Plant 2	Plant 3	Plant 1	Plant 2	Plant 3	Plant 1	Plant 2	Plant 3	
Excell No-Till 104RMD			Excell No-Till 109RMD			Excell No-Till 105RMD			Excell No-Till 108RMD			
No-Till w/PPF&IF			No-Till w/PPF&IF			No-Till w/PPF&IF			No-Till w/PPF&IF			
7	7	7	7	7	7	7	7	7	7	7	7	Primary Roots(incl.seedling+1st node)
6	6	5	6	8	8	6	8	8	6	7	6	2nd Nodal Roots
8	8	6	8	8	10	8	8	9	6	9	6	3rd Nodal Roots
0	0	0	2	2	3	1	2	3	2	0	0	4th Nodal roots
15	15	16	17	18	17	20	20.5	21	19	16	19	Plant Height (inches)
14	13	10	15	16	15	13	13	15	14	14	15	Root Depth(inches)
8	7-8	7-8	8	8	8	7-8	7-8	8	7-8	7	7	Leaves(no.)

Table 5. ChannelBio 3-hybrids to observe root strength and characteristics in a strip-till environment

ChannelBio Hybrids Observations for Root Strength and Architecture Comparisons

E-W row Direction Plots; plots 114RMD, 110RMD & 109RMD In Strip-Till Environment

Plant 1	Plant 2	Plant 3	Plant 1	Plant 2	Plant 3	Plant 1	Plant 2	Plant 3	
STill w/IF 114day			S-Till w/IF 110day			Strip-Till w/IF 109day			
7	7	7	7	7	7	7	7	7	Primary Roots(incl.seedling+1st node)
8	8	9	10	8	10	8	8	6	2nd Nodal Roots
8	7	8	8	9	8	7	10	8	3rd Nodal Roots
4	3	2	3	2	5	2	3	5	4th Nodal roots
17	15	16	17	16.5	16	14	13	14	Plant Height (inches)
15.5	16	13	14.5	14	14	12	10	12	Root Depth(inches)
8	8	8	8	8	8	7	7	7	Leaves(no.)

Review these five tables as to how strip-till offers some advantages. We have left out the variety numbers until a later date because we are trying to provide a set of observations that look at root strength and not just a number that some find and say that is poor versus great due to a number or a yield trial at a neighbors farm. Our purpose goes beyond that, we want to depict the tillage factor and those identified as weak vs. strong root types we maybe enhancing a weaker rooting type to be a solid performing corn hybrid with strip-till.

We at Orthman Manufacturing, Inc work with a number of seed corn companies to utilize their top hybrids and this is just a few we are observing this year.