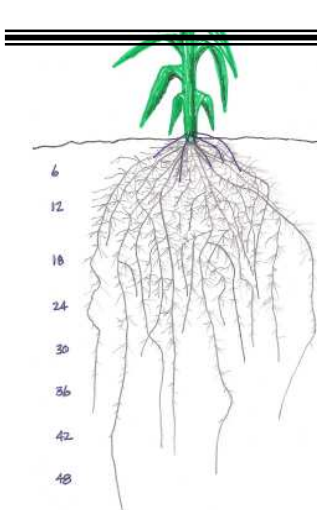


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As reported earlier in the growing season at the Orthman Research Farm the growing season of 2008 has been wet and cool, now we are waiting to harvest because of rain and an early fall snow. This report is to give you a look at what happened up to root senescence around the 20th of September. Days hence, the corn plants and ears are drying down and we await harvest or as putting the “lie detector” in the field as they say in Australia. It is important to share with you how our in-furrow and strip-tilled fertility study went. How corn roots develop is important and providing nutrition and water even before the corn runs through the combine demonstrates the effectiveness of the system we promote.

The objective as we take with our work investigating root development with the Orthman Strip-Till System is, to determine the advantages of a great seedbed, root start, and the results all the way to harvest. The tables below may be some repeat earlier data, but we want to give you information to compare and evaluate the entire season as soon as we could. Harvest is still several days away.

Table 1. Orthman Strip-till Corn Root Research at 25DAE - Lexington, NE June 2008

Seed Company	Fertility Program	# Prim.Nodal Roots	Depth of Roots[max]	# Advent Roots	# 2nd set Adv Roots	Total No. Adv & Nodal Roots	Ht of Center leaf [in.]
Mycogen	ppl w/ST	15	12	8	4	24	28-33
Dekalb	ppl w/ST	15	12	8	3	23	26-32
Mycogen	check-8rows	8	10	6	2	20	18-28
Mycogen 113RMD	6gal/ac-Kugler, IF	19	18	14	16	30	28-34
Mycogen 113RMD	4gal/ac-Kugler, IF	18	14	12	14	26	26-32

Legend of Fertility program: ppl w/ST [pre-plant 52#N, 56#P, 12#K, 6#S, 1#Zn with 1tRIPr]
ppl w/ST & SC [pre-plant 52#N, 56#P, 12#K, 6#S, 1#Zn with 1tRIPr + New Seed Coating experimental]
check-8rows: no pre-plant, no fertility w/ strip-till 1tRIPr|| 2x2 fert. at planting time

Table 2. Corn Root Development at 55DAE at Lexington, NE July 2008

Variety Plots	#Nodal/Primaries	#Adven Roots	#2nd Set Adven.	Total # Roots	Rooting Depth
Check/no-pre-plant Mycogen 113RMD	12	10	12	34	28
Mycogen 113RMD Strip-Till pre-plant	15	12	10	37	30
Kugler 4gal/ac Mycogen 113RMD	18	14	12	44	27
Kugler 6gal/ac Mycogen 113RMD	16	18	14	48	33

Water table is consistent from 30 to 38 inches deep across plots on July 23, 2008

Table 3. Corn Root Development at 105DAE at Lexington, NE Sept 17, 2008

Variety Plots	Max Rooting Depth (inches)	RootZone Width @12in.	RootZone Width @24in.	Ht. To ear(in.)	Ht to top leaf (in)	Cu.In Rooting/Soil Profile	Depth to H2O table (in.)	Yield (bu/ac)
Check/no-pre-plant Mycogen	31	16	19	21-26	62-70	2360	57	
Mycogen Strip-Till pre-plant only	30	22	21	23-28	66-74	2730	55	
Kugler 4gal/ac15-15-2 /Mycogen	53	22	20	31-36	77-90	4630	54	
Kugler 6gal/ac15-15-2 /Mycogen	44	18	21	35-39	75-96	4275	52	

Note:

Corn was 113 days RMD hybrids Pre-Plant was mix as stated in Table 1.

As each day after emergence (DAE) progresses you will see in the tables above that root growth expanded early and then all the rain we had in the Lexington area retarded deep and very deep root development due

to a rising water table that persisted all the way into September. The hybrids we selected have the potential for deep root penetration in the soil. That was a prerequisite of ours. Many folks in the Central Platte River Valley had to contend with the water logging issues which inhibited root development and thusly may have reduced top corn yields.

Considering high yielding corn root systems....

In deep and very deep soils, soils that are 40 to 60 inches deep and deeper corn roots in the Western Corn Belt, corn should reach 65 to 70 inches of depth in one growing season. We at Orthman have observed root systems going deep into the soil profile to access moisture and nutrients, when they do yields climb to numbers exceeding 240 bu/acre (6.72tons/ac). In 2008 the rain was overly abundant, the soils all around Lexington, Nebraska where this study is being conducted, water saturated our soils. The roots never needed to extend very deep to access water, although the nutrients moved and we lost products. How much, we will know after soil sampling. Is there a rule of thumb for inches of root zone and yield? No, we know not if one even exists after 9 years of work.

Our work and observations have demonstrated that 12 inches or more of root development deeper will provide a positive yield response at a minimum level of 5 to 6% increase. Add fertility placement at strategic depths and the increases have been very good, 12 to 20%. Does hybrid selection play a role? Definitely and this is part of what we are examining in another study.

As I prepare this report I draw some points to consider with the 3 tables on previous page; 1) the in-furrow fertilizer and placed fertility with the Strip-Till implement definitely combined to enhance root development. 2) 23 to 29% more actual root numbers per plant were observed with the in-furrow fertilization at planting along with strip-till compared to the check plots (Table 2). The check plots were strip-tilled with no pre-plant fertility. But at planting there was 2x2 placement of 10-34-0 at a 5 gallon/acre rate. 3) Where we did



Figure 1. "Australian Lie Detector"

pre-plant fertilizer with the strip-till, we see the number of roots as a 16-19% drop in root numbers (Table 2). 4) Plant height, root depth at 100 DAE and cubic inches of root/soil area all are greater with strip-till and in-furrow fertilization (Table 3). The plants were healthier, stalks have stood well upon until the snow and wet of late October 2008 where we combined fertility, strip-till and in-furrow products to enhance early growth. Moisture as of this writing is 19.2% in the grain. That magical moisture point is 17% and below where harvest is safe from dock at the elevator. We will have weight per bushel and moisture besides yield by Thanksgiving at this rate.

With harvest we will draw conclusion from the 2008 season and yields. Come back at look for the end results in a subsequent report.

11/04/2008