Joint Colorado Corn Growers/Irrigation Research Foundation Root Architecture Study

The second portion of the Colorado Corn Growers study to evaluate roots at mid-season period of the 2008 season, we at the Irrigation Research Foundation (IRF) -Yuma, Colorado want to share with you how the roots are shaping up at 55 days after emergence (DAE). Mike Petersen, Precision Tillage Agronomist with Orthman Manufacturing is our associate digging and defining the roots, he has the following information/data for you to consider. We are glad to present this information as to how we see the rooting architecture is becoming evident.

You maybe are asking why this study? It is the direction from Colorado Corn Growers that in order for corn growers in Eastern Colorado and Western Kansas all should have some knowledge of what hybrids they select every winter for the coming spring seasons planting will do better in the limited rainfall and declining water from irrigation wells. It is the question of the Corn Growers, do we know if the corn you select will withstand the rigors of the heat and drought stresses common to the Western Corn Belt. Colorado Corn Growers is able to give some evidence from this study that the eight seed corn companies involved in this years work have some information that offers you better information when you choose 2009's corn, the Corn Growers believe all can benefit.

The figures below are the 55DAE portion of this study, depiction from the excavations completed July 7 and 8, 2008 at the IRF. All hybrids are 108 to 113 day length.

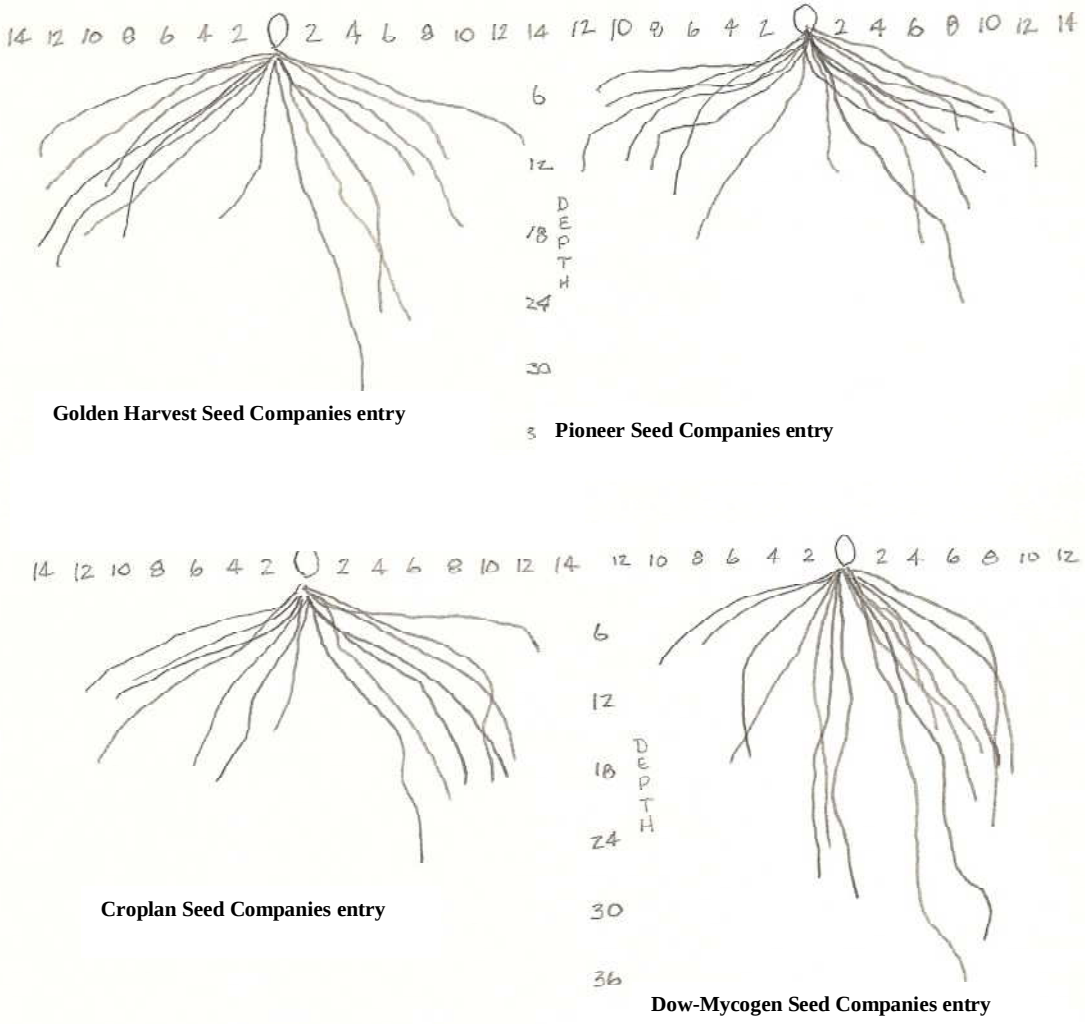

Figure 1. Four of the eight hybrids in the Colorado Corn Growers root architecture study. All dimensions shown are in inches for width in row and depth of root extension at 55DAE.

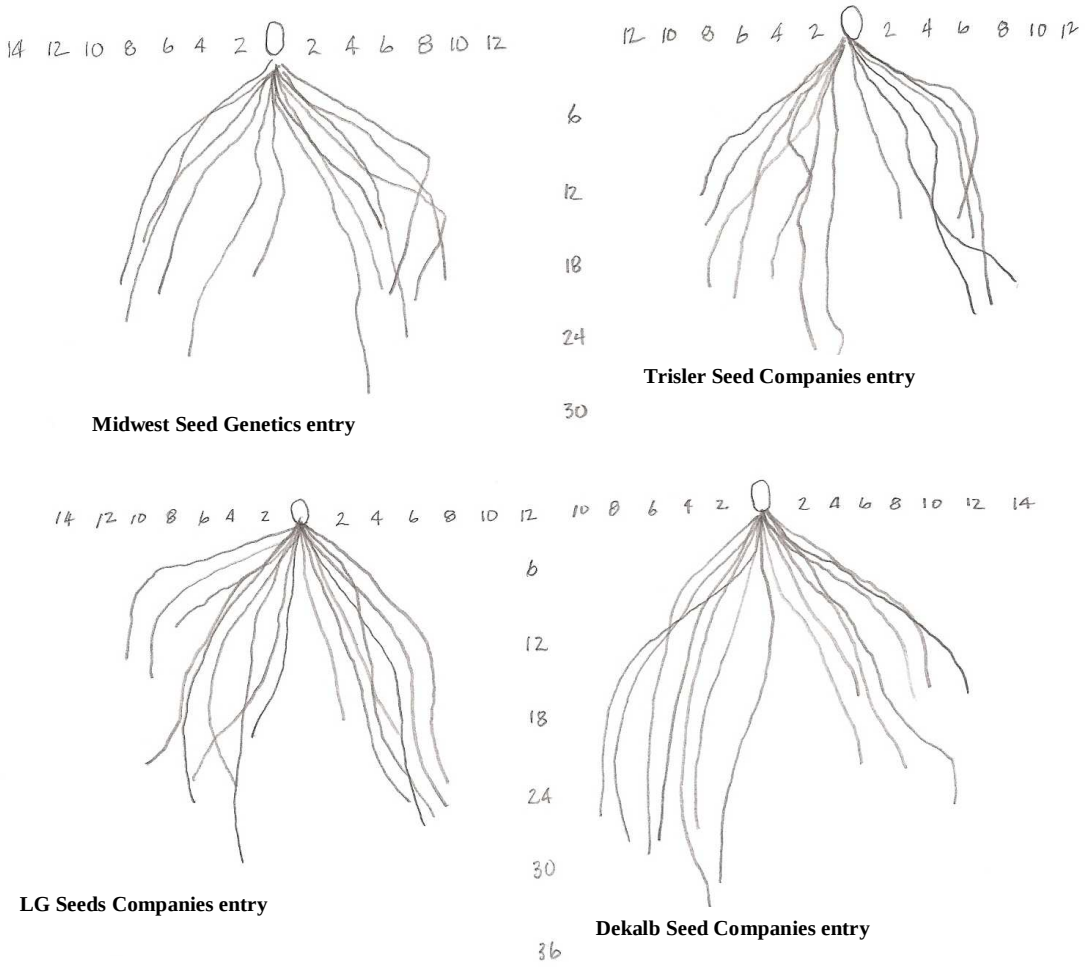

Figure 2. Second set of root diagrams from the eight hybrids in the Colorado Corn Growers root architecture study. All dimensions shown are in inches for width in row and depth of root extension at 55DAE.

Table 1. Root dimensions for the eight seed corn companies entries for the 55 DAE period.

Seed Company	# Prim.Nodal Roots	Depth of Roots[max]	# Advent Roots	# 2nd set Adv Roots	Total No. Adv & Nodal Roots	Ht of Center leaf [in.]
Pioneer	16	24	8	10	34	35-44
LG Seeds	16	28	10	5	31	37-43
MidWest Seeds	13	28	11	10	34	36-44
Trisler	13	31	10	9	32	35-40
Mycogen	15	40	13	8	36	39-43
Golden Harvest	12	30	15	10	37	36-42
Croplan	14	26	13	7	34	28-38
Dekalb	15	33	10	8	33	35-41

This segment of the reports is showing some differences that you maybe able to recognize similar to what you have observed in your fields. It is our hope that with sound irrigation water management practices these corns will finish well. Reminder: We are not taking this portion of the Colorado Corn Growers study to yield, we are only reporting to you the rooting structure.

There is an immense amount of information we can offer about crop water availability, nutrient capacity, capacity to handle drought, and historical rooting architecture knowledge of Mike's observations over the last 27 years (1981-2008) he has dug roots in eastern Colorado, western Kansas, and southwestern Nebraska.

A final report will become available after the 100-105th DAE set of digs. At that time we will know more about how the corn finished and handled the summer of 2008, one of some long hot days and low rainfall. So stay tuned.

Respectfully,

Mike Petersen and Charles Corey
Orthman Agronomist Executive Farm Manager-IRF