1023-Z1-1689 **Brandy S. Wiegers*** (wiegers@math.ucdavis.edu), Mathematical Sciences Bldg., One Shields Ave., Davis, CA 95616, **Angela Y. Cheer** (cheer@math.ucdavis.edu), Mathematical Sciences Bldg., One Shields Ave., Davis, CA 95616, and **Wendy K. Silk** (wksilk@ucdavis.edu), Plant and Environmental Sciences Building, One Shields Ave., Davis, CA 95616. *Three Dimensional Computational Model of Water Movement in Plant Root Growth Zone.* Preliminary report.

Primary plant root growth occurs in the 10mm root tip segment. Primary growth is characterized by longitudinal cells expansion that uses water to stretch the rigid cell walls. Silk and Wagner provided an osmotic root growth model to describe the water potential necessary to sustain this process. The osmotic model assumes that the growth zone is hydraulically isolated from the rest of the root, with all water necessary for growth coming from the surrounding soil. Unfortunately the radial water potential gradient suggested by the osmotic model results cannot be verified empirically. We have expanded upon the original theory to create a three-dimensional model with the addition of leaky pipe point sources in the growth zone. It is our conjecture that these structures are acting as pipes for water to be pushed down into the growth zone from the mature section higher in the root. These pipes are providing the additional water necessary for growth to occur. Using data from corn, Zea mays, we are able to examine the three-dimensional point source model in terms of current water potential measurements and suggest future work to continue the development of this model. (Received September 26, 2006)