1035-92-69 **Brandy S. Wiegers*** (wiegers@math.ucdavis.edu), Department of Mathematics (MSB), One Shields Ave., Davis, CA 95616, **Angela Y. Cheer** (cheer@math.ucdavis.edu), Department of Mathematics (MSB), One Shields Ave., Davis, CA 95616, and **Wendy K. Silk** (wksilk@ucdavis.edu), Department of Land, Air and Water Resources, PES, One Shields Ave., Davis, CA 95616. *Three-Dimensional Internal Source Primary Root Growth Model.*

For the last twenty years, primary root growth has been modeled with the Osmotic Root Growth Model which assumes that all the water for the growth process is taken from the surrounding growth medium. Further examination of this model have revealed discrepancies in empirical measurements versus the osmotic root growth model calculations. The current theory is that the discrepancy of the model result from the discounting the proto-phloem structures that are present in the growth zone as a potential growth water sources. This theory is tested by the Internal Source Root Growth Model that incorporates the proto-phloem structures, assuming that the structures are acting as pipes to draw water down into the growth zone from the mature section higher in the root. Using the primary root growth zone of corn, *Zea mays*, as the model standard, the results of the Internal Source Model are shown to closely represent to the laboratory results, with a maintained longitudinal gradient and minimized radial gradient. *Introduction to plant physiology, numerical methods, model sensitivity analysis and suggestions for future work will be presented.* (Received July 10, 2007)