

## **Graywater Application for Landscape Irrigation: Greenhouse Experiments**

Alicia Shogbon and Sybil Sharvelle

Department of Civil and Environmental Engineering, Colorado State University

**Abstract.** The use of household graywater for landscape irrigation is gaining increasing popularity. However, concerns are prevalent on the potential toxic effects of graywater to plant life as well as potential migration of graywater contaminants to the groundwater. Given the difficulties associated with determining contaminant transport in the field, a greenhouse column study was embarked on. This study represents a means by which the potential for migration of graywater contaminants to groundwater can be determined under controlled conditions by conducting leachate analyses. The experiment setup includes the use of 38 custom plant pots fabricated from polyvinyl chloride (PVC) pipe, 6 inches in diameter with a total length of 24 inches. Provisions were made for a drainage layer at the bottom and a leachate collection system. The effect of graywater irrigation is being studied on two plants – euonymous and lemon as well as two grasses – bermudagrass and tall fescue. 8 pots have been designated for each plant and grass type with 4 being irrigated with synthetic graywater (graywater formulated with the use of chemicals that mimic typical graywater constituents). As a control, the other 4 pots are irrigated with potable water. Preliminary leachate analyses have been performed with further leachate analyses to be performed periodically to measure surfactant concentrations and graywater chemical constituents. Soil analyses will be performed at the end of the experiment. To evaluate graywater effects on plants, plant health and growth will also be monitored both visually and by tracking percent bloom.