Abstract: Impacts of Carbamazepine Rates on Lettuce (*Lactuca sativa* var. capitata**) Growth in Hydroponics Systems.** Emily Stamm*1, , Clinton Williams2, Cade Coldren1, Catherine Simpson1, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409, 2US Arid-Land Agricultural Research Center, 21881 North Cardon Lane, Maricopa, AZ 85138. (emstamm@ttu.edu)

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As water security becomes a more substantial threat to our population, alternative water sources have been considered and studied. Reclaimed wastewater from wastewater treatment facilities (WWTF) has become the primary alternative to potable water. A concern with reclaimed wastewater is that there may be contaminants that are resistant to degradation and filtration. Contaminants of emerging concern (CEC's) include pharmaceuticals as well as other chemical compounds. The focus of this study is to determine how much of a specific pharmaceutical is taken up by edible crops by mathematically modeling the pathway the CEC takes from the roots to the rest of the plant.

The pharmaceutical used in this study is carbamazepine (CBZ). Introduced in the 70's, CBZ has been in frequent use in the U.S. and is used most commonly as an anti-epileptic drug but can be used for other conditions such as bipolar I and trigeminal neuralgia. CBZ was selected as the pharmaceutical of this study because of its prevalent use and resistance to degradation which results in CBZ's persistence in the environment. WWTF were designed and built prior to the knowledge of CEC's and as a result the WWTF are ill-equipped to filter out these CEC's; only 7% of CBZ is filtered out during wastewater treatments. It has been shown that pharmaceuticals, such as CBZ, have been found in edible crops at varying concentrations. This is concerning as we do not know how these CEC's will affect humans, animals, and the environment long term. Because of it's success in hydroponic conditions and because it has been shown to take in CEC's, lettuce (buttercrunch) was selected as the edible crop in this study.

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