

Affects of Forest Cover Types on Soil Properties in Liuzhou, Guangxi, China.

Author: Crystina M Bakus

Major: Environmental Science

Project Advisor: Dr. Roger A Williams

Over the years the Eucalyptus forestry programs in Guangxi, China have been booming in economic growth. Eucalyptus is of most concern compared to other forest stands, as it is perceived to have negative impacts on the landscape due to high moisture demand and decrease of soil quality. We are predominately concerned whether there is a difference among the age groups of Eucalyptus, regarding fertility and moisture. If both of these variables are being depleted, the soil may not be able to function and support the current and future Eucalyptus stands. Observational studies measuring soil temperature, pH, electrical conductivity, soil moisture, and Nitrogen-Phosphorus-Potassium (N-P-K) were conducted in three different tree stands Eucalyptus, Mason Pine and Chinese Fir. Statistical programs using ANOVA were performed to determine significant difference. Eucalyptus had the highest rates of N-P-K fertility (mean = 6.79ppm), compared to Chinese Fir (mean = 5.80ppm) and Mason Pine (mean = 6.56ppm), but was not found to be statistically significant through ANOVA, although Eucalyptus's higher fertility rate could be due to fertilization during the first two years of planting. Average soil moisture indicated Eucalyptus to be statistically different (6.11%) than Chinese Fir (8.53%) and Mason Pine (7.92%). The annual decrease of soil moisture in Eucalyptus stands can be attributed to the fact that the stands are being harvested and planted with the same species, not allowing the soil to replenish. Policy makers and managers should be prepared for long-term sustainable management of Eucalyptus in China. Management goals could integrate endemic tree species into the Eucalyptus stands to increase biodiversity, and allow soil to replenish moisture. Other goals could include sustaining surface organic matter in Eucalyptus to keep nutrients balanced as the forests are harvested and planted with the same species.