Phytodesalination of Saline Soil Using Native Hawaiian Halophytes

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The potential salinization of agricultural land in Hawai?i due to tsunami inundation or storm surges would make the soil unsuitable for growing crops. Finding a sustainable way to remove salt from the soil is critical because Hawai?i's limited supply of fresh water makes the use of leaching with water to remediate the saline soil unfeasible. As a result, the purpose of the study was to find a Native Hawaiian halophyte that could remove salt effectively from saline soil. The study examined how the salinity of saline soil was affected at the end of one month when used as a growth medium for three Native Hawaiian halophytes. The hypothesis was that when ae?ae (Bacopa monnieri), akulikuli (Sesuvium portulacastrum), and pohuehue (Ipomoea pes-caprae subsp. brailiensis) were grown in saline soil, the akulikuli and the pohuehue would remove the most salt from the soil. The methodology involved growing five of each type of halophyte in saline soil for 30 days and then measuring the electrical conductivity of the soil to determine the salt reduction in the soil. The results of the study showed a mean salinity reduction of 38.5% for the akulikuli, 37.4% for the ae?ae, and 32.1% for the pohuehue. Therefore, the hypothesis was partially supported. The reason was because the akulikuli had the highest mean salinity reduction and removed the most salt, while the pohuehue had the least mean salinity reduction and removed the least salt.

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