Processing and Testing of the Invasive Species, Ipomoea aquatica, as a Low-Cost and Environmentally Sustainable Soil Amendment Agent

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There are four wildlife sanctuaries in Oahu and all are in desperate need of help. In our investigation, we gathered information about the problems with one of the sanctuaries, Pouhala Marsh. In this experiment, we mapped out the deficiencies in the soil of different parts of the marsh and once it was diagnosed, tested Ipomoea aquatica, an invasive species, as a soil amendment agent. In this study, soil samples from the marsh were taken and tested for pH, nitrogen, phosphorus, and potassium values. After finding that there is a decrease in potash as you get further away from the stream, we then went into our next phase which tested the Ipomoea aquatica soil amendment. I. aquatica were processed and added to the soil samples and rye grass seeds were grown in these samples. We had a positive control which was a store bought fertilizer. We also had a control group that had the same concentrations and positive control but the soil was collected outside our school campus. The height of grown plants were observed and measured. Finally, we used a spectrophotometer to show the pigment profile of unprocessed vs processed I. aquatica. For our results, the data showed that the average nutrients of each row of soil samples from the marsh had no statistical difference, except for potassium. Our data also showed that 5% of the amendment was optimal for plant growth. In fact, it performed the best. Finally, our data showed that processing I. aquatica will change its pigment profile. Finally, in our cost analysis, we found that if we grow the I. aquatica from just one bundle bought from the store, it would only cost $0.01 per gram made while many fertilizers for sale is around $0.02 per gram.

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