The Optimization of Compost Tea Formulations: A Plan for Future Sustainability of the Biosphere

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Compost tea plant applications reduce foliar diseases and the toxicity that is associated with chemical fertilization use, in part due to beneficial bacteria within the tea. With higher counts of beneficial bacteria, healthier plant function is facilitated and the survival of possible plant pathogens is hindered. The purpose of this project was to determine the optimal temperature, pH, color and compost type that would promote the maximum survival of beneficial bacteria in compost teas. pH and color measurements were taken throughout a 28 day time period, due to the ease with which farmers are able to measure these two factors before applying the tea to their crops. There were six types of compost used to formulate the teas and they were stored under different temperature environments of 4° C, 22° C, and 37° C, where 22° C was found to promote the greatest bacterial colony survival. Bacterial colony counts decreased over time while the pH and L* color lightness values increased. The inverse relationship between bacterial colony count and pH / L* color lightness were found to be statistically significant and highly linearly correlated. Horse compost tea incurred the highest levels of bacterial survival, whereas Malibu Cow exhibited the lowest levels. These results can be directly applied to present-day farming procedures to aid in standardizing and maximizing the benefits of compost teas all around the world.