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## Leveraging Microalgae Biomass For Eco-Friendly Biofertilizers: A Path Towards Greener Practices

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### Abstract

In an era where the urgency to address environmental challenges looms large, the intersection of technology and nature offers promising solutions. Among the myriad issues facing humanity, the depletion of natural resources, climate change, and the burgeoning global population stand as formidable obstacles. However, amidst these challenges lies a beacon of hope in the form of microalgae, particularly the resilient *Chlorella* species. With their rapid growth rate and adaptability to harsh environments, *Chlorella* presents itself as a versatile candidate for addressing pressing concerns, particularly in the realm of food security. Rich in proteins, essential and non-essential amino acids, lipids, sugars, and vitamins, *Chlorella* biomass holds immense potential for revolutionizing the agricultural landscape. The fabrication of biofertilizers from nutrient-rich microalgal biomass signifies a paradigm shift towards sustainable practices. By harnessing the inherent fertility-enhancing properties of *Chlorella* and other microalgae, biofertilizers offer an eco-friendly alternative to conventional chemical fertilizers, thereby mitigating environmental degradation and promoting soil health. Bloom collected from Bird Lake (lac des oiseaux) in October 2022. *Chlorella sp* were isolated then cultured using BG11 medium in a culture room at  $25 \pm 2$ C then we monitored the growth rate by cell counting using Malassez counting cell. Exponential growth is allowed, and after 25 days, a concentration of  $8.6 \times 10^5$  cells/ml and  $9.8 \times 10^5$  cells/ml respectively is reached. The culture is then harvested by centrifugation, and the biomass is freeze dried then preserved at  $-80^\circ\text{C}$  until further analysis. *Chlorella* biomass in addition to other microalgae strains will be used for the fabrication of the agriculture fertilizer.

**Key Words:** Agriculture sustainability, Microalgae, *Chlorella sp*, Soil health, Crop productivity

