

THE USE OF SEWAGE SLUDGE BIOCHAR FOR SOIL AMENDMENT  
AND ITS IMPACT ON SOYBEAN GROWTH AND RHIZOBIA

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## **Abstract**

The objective of the project was to observe how the addition of sewage sludge biochar impacts the nodule formation and plant growth of soybeans (*Glycine max*) in alkaline non-agricultural soil. Biochar usually contains some nutrients and can improve microbial activity due to its structure. It has been hypothesized that biochar addition will increase nodule formation and plant growth due to an improvement in soil quality and increased nutrient availability.

Biochar, produced using Hawaii Kai sewage sludge by a flash carbonization method, has relatively low fixed carbon content and high ash content compared to biochar produced from other feedstocks. Its addition to an experimental soil did not result in increased plant productivity. The addition of 1.0% of the sewage sludge biochar to the soil did not affect nodule formation and soybean growth, whereas addition of more than 1% resulted in negative impacts. Addition of sewage sludge biochar to soils above 2.5% resulted in reduced plant productivity. It is thought that this reduction in productivity was a result of increased electrical conductivity associated with the biochar amendment.