

A Field Study: Sustaining Crop Growth in a Flooded Area with the Application of Oscillatoria

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The purpose of this project is to test if *Glycine max*, *Zea mays*, and *Pisum sativum* can withstand a flood for a longer duration with the addition of *Oscillatoria* in a field test experiment. If *Glycine max*, *Zea mays*, and *Pisum sativum* are disturbed by flooding with the addition of *Oscillatoria*, then the crops will stay alive longer under the circumstances of field flooding. Field flooding can be devastating to farmers throughout the world. A negative control group was used for each crop type with normal watering and growing while a positive control group was used to place crops under flooded conditions. The experimental groups for the crops went under the same procedure as the positive control, but then a type of Cyanobacteria called *Oscillatoria* was added to each tank with different amounts and application dates. The flooded crops that received *Oscillatoria* quantitatively and qualitatively survived better than the plants that did not receive *Oscillatoria*. The *Oscillatoria* applied groups held a green and healthy appearance. Dissolved oxygen levels raised after the application of *Oscillatoria* and the pH of the soil was maintained between 7.8-8.2. The 350 soybeans increased in height by 25%, 330 soybeans by 35%, and 5828 PQ corn by 20%. Soybean t-Tests came back highly significant for experimental groups with low concentration and low delay of application. *Oscillatoria* releases butylated hydroxytoluene as a natural nitrogen fixator and produces oxygen that allows soybean and corn crops to survive under the circumstances of field flooding. The hypothesis is supported.