Name(s)

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Project Number

J1926

Project Title

Vrikshayurveda, Bio Vita for Plants: The Effects of Antioxidant Rich Foods on Plants' Growth and Health

Abstract

Objectives/Goals

The intent of this project is to study the effects of antioxidant-rich foods (both type and amount) on plants' growth and health. I hypothesized that if soil is supplemented with antioxidant-rich food, plant growth and health will be better. I also hypothesized that since cloves rank as the richest source of antioxidants known, cloves have greatest potential to display rapid plant growth and vigorous health.

Methods/Materials

I designed a series of 10 trials using 16 antioxidant-rich foods and testing 6 different types of plants. I observed quantitative and qualitative data like plant height, number of leaves, length of leaves, and overall health of plant. 183 treatments of antioxidant-rich food supplements based on different combinations of different amounts and frequencies on 672 test plant subjects over an 8-week period were examined. Statistical analyses like one-way and two-way analysis of variances (ANOVA) were also conducted. In trials 3 to 6 and 8 to 10, the power of replicates was employed. Trial 10 employing 345 plant subjects tested 57 experimental groups, each with 6 replicates, covering 19 different combinations of antioxidant-rich foods in 3 different amounts to study the effects of both factors. 2-way ANOVA with replication was run on the trial 10 experimental data.

Results

At 99.5% confidence level, I concluded that the type and amount of antioxidant-rich foods affect plants' growth and health. At 86.7% confidence level, I also concluded that the effects of antioxidant-rich foods on plants depend on the amount of supplement. Antioxidant-rich foods such as Green Tea, Neem, Gotu Kola, Hibiscus, Cinnamon, Onion, and Ginger positively affect plants. Certain combinations of antioxidant-rich foods like Gotu Kola, Hibiscus, and Amla work together to beneficially affect plant growth and health. Higher concentrations of certain antioxidant-rich foods like Cloves and Spirulina are harmful to plants. At the end of the experiment, experimental plant subjects survived longer than control group subjects when they were subject to water and nutrient stress.

Conclusions/Discussion

Antioxidant-rich foods as supplements to plants can be employed as a tool to improve farmers' net income with longer harvests, higher quality yields, and better shelf life. We can consume these high quality plant products, fight free-radicals and diseases, and say hello to a healthier world!

Summary Statement

My experiment aims to demonstrate a norm of Vrikshayurveda, an ancient practice of giving herbs with potent antioxidant activity as supplements to plants, and proves that antioxidant-rich foods positively affect plants' growth and health.

Help Received

Grandma motivated to undertake this project; Mom guided in design of experimental trials; Dad taught me the power of replicates for greater experimental success; Grandpa, Uncle, Aunt provided rare antioxidant-rich food supplements; Mrs. Hall initially advised; Mrs. Nguyen guided me in this project.