CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)

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Project Number

S1911

Project Title

Which Plant, Organic or Genetically Modified, Is the Most Economical for California Farmers?

Abstract

Objectives/Goals

The objective is to determine whether Organic Green Beans or Genetically Modified Green Beans are the most economical for California Farmers

Methods/Materials

100 Blue Lake Bush Green Bean seeds were planted into 5 different sections in groups of 20. 1 section was organic whereas the other four were different variations of Genetically Modified Green Beans. The green beans were watered 1 tablespoon of water daily on the first month and 2 tablespoons of water daily the second month on. The height, quality and quantity of the green beans were noted on a semi-weekly basis. Within 70 days, the crop yield (amount of green beans)data was collected. The best green bean in terms of economics was determined by crop yield, quality, and quantity.

Results

It was found that about GMO Plants grew faster by about 91.3% taller and 90% more in quantity compared to the organic plants. Genetically Modified Green Bean plants produced about 25% more crop per plant and 89% more crop per variation of green bean than the organic plants. However Organic Green beans produced higher quality produce and plants than GMOs. All of all Organic plants lacked any visible mutations. However, on average 30% of all GMOs had visible leaf mutations. Therefore, it can be concluded that GMOs are not 20% more cost effective in terms of the consumer, but rather they are 90% more economical.

Conclusions/Discussion

It was found that Genetically Modified plants are simply more economical for California Farmers because they produce a much higher crop yield, more plants are grown, and common plant diseases rarely affect these plants. California Farmers look to make the greatest amount of net income and therefor, need to maximize the amount of crops per square acre and GMOs meet this objective. However, if the consumer is looking in terms of quality and health, Organic plants provide a higher quality crop, free of pesticides and genes that could potentially create a protein or enzyme that may unintentionally spark an allergic reaction.

Summary Statement

This project is aimed to find which green bean, organic or genetically modified, is the most economical for Californnia Farmers.

Help Received

Mr. Geoffrey Barraclough, a Statistics Teacher, helped with the statistical analysis