CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

35799

Project Title

Water Sources and the Growth of Lolium multiflorum (Annual Ryegrass) (Year 4)

Abstract

Objectives/Goals

This year I will take my previous mixture of 50% Colorado, 30% Reclaimed, 20% Aquifer and compare it to mixtures used currently by golf course superintendents. I will look for the most effective water mixture; effectivity will be determined by cost per gallon, algae inhibition, reduced fertilizer usage, and reduced aquifer consumption.

Methods/Materials

Materials: Aquifer Water, Reclaimed Water, Colorado River Water, Water Absorbent Beads; Lolium multiflorum seeds.

Survey distributed to Golf Course Superintendents regarding water sources and practices.

Seed Germination & Growth Methods: Prepare absorbent beads; add applicable water mixtures. Place 10 seeds at the bottom of each via. Record seed germination and growth.

Results

The most effective mixture for seed germination and grass growth was 50% Colorado, 30% Reclaimed, 20% Aquifer.

11 Golf Courses Superintendent responded to the survey. The average responses were:
43% use Aquifer water in their bodies of water, 57% use Canal water in their bodies of water.
17% do not use the same water used in ponds and lakes to irrigate their landscapes, while 83% do.
The average amount of money spent annually on fertilizer is $118,000.
The average amount of money spent annually on water is $84,333.

Conclusions/Discussion

The mixture of 50% Colorado, 30% Reclaimed, 20% Aquifer, yields better results when considering Algae inhibition and Aquifer consumption. The higher concentration of Reclaimed water discourages biological growth. Due to the filtration process, Reclaimed water makes an ideal counteractive agent to the algae growth. Additionally, the low percentage of Aquifer water reduces aquifer consumption. The high amounts of Colorado water will encourage Lolium multiflorum, a type of plant that grows with much less requirements than algae, to grow without the necessary use of fertilizer.

Summary Statement

Maximize effective golf course water mixtures of Aquifer, Reclaimed, and Colorado River while minimizing aquifer use.

Help Received

Coachella Valley Water District provided water samples; survey responses from golf course superintendents from the Hi-Lo Chapter of the Golf Course Superintendents Association of America.

Preliminary