CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
J1124

Project Title
The Effect of Runoff Substances on the Fertilization of Sea Urchins

Abstract

Objectives/Goals
This experiment was conducted to test whether different quantities of fertilizer dose have an affect on fertilization percentages on the reproduction of Sea Urchins. My goal was to successfully have understanding between previous information learned as compared to the outcomes of the experiment. It can be a reference towards the fact that many humans use fertilizer as a benefit for them specifically for their crops, but don't realize the impact it can have on the marine ecosystem, which is the message I want to send.

Methods/Materials
I first was provided with the organisms used in this experiment by the facility of CMA. Once collected, the Sea Urchins were injected by a Potassium Chloride solution, that was created by me, although the actual process in injecting the Sea Urchins was done by an adult. I then created 3 different fertilizer concentrations, which was a combination of a certain quantity of fertilizer dose and clean water. Once the previous procedures were completed, I combined the egg cells and the chosen concentration on the microscope slide, while using different pipets. I then combined the sperm cells into the mixture with a toothpick. After a minute, I measured the number of fertilized eggs as compared to the total amount of eggs that appeared.

Results
The results of this experiment show that the controlled concentration had an average of 92% of all eggs with normal AQ2 water got fertilized. The 10% fertilizer concentration had an average of 95% of all eggs with 10% fertilizer dose got fertilized. The 25% fertilizer concentration had an average of 88% of all eggs with 25% fertilizer dose got fertilized. The 50% fertilizer concentration had an average of 85% of all eggs with 50% fertilizer dose got fertilized. These results indicate to my objective because they both relate towards the fact in how the greater quantities of fertilizer dose had a greater affect.

Conclusions/Discussion
This project can expand our knowledge about the subject of fertilization because humans today can analyze these aspects in a different way. The act of using substances as a benefit for different tasks whether it's at home or at work can now be realized that it's having a negative affect on the marine ecosystem. Higher quantities of fertilizer being exposed to the ocean can lower the number of fertilized eggs, which over time can decrease the Sea Urchin population which can also affect their predators.

Summary Statement
After distributing multiple trials, I observed that higher quantities of fertilizer dose for example in this case the 50% fertilizer have a significant difference as compared to low quantities in comparison of number of fertilized eggs.

Help Received
I would like to acknowledge the staff of Cabrillo Marine Aquarium in assisting me throughout this project, from answering all my questions to injecting the Sea Urchins needed in this experiment.