



Colorado Science and Engineering Fair

2024 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Fin-Tastic Harmony: Aquaponics with Betta

Finalist's Name: Robert Horner

School and City: Monte Vista High School, Monte Vista

Sponsor's Name: Loree Harvey

Category: Animal Sciences (ANIM)

Division: Senior (9th - 12th grades)

Abstract (250 words or less):

Aquaponics systems are used in many different ways. A few ways an aquaponics system can be used are for food, oxygen, or just so you don't have to clean out a fish tank as much. Basically, aquaponics systems work if there is bacteria present that turns ammonia that fish urinate into nitrites, which eventually turn into nitrates. Nitrates are good for plants due to the fact that they give nutrients. I put nine aquaponics systems in a row of nine. I had 4 tanks with plants without a fish, 1 tank had just a fish, and 4 tanks had both so I could maximize my data collection. Then once every five days I got the water quality from the FreshWater Master Test Kit. I monitored both the water quality and plant health and height, and also how the fish were doing. Due to the fish urinating out ammonia, the plants grew faster and better than without fish. I had a significant difference with radishes in height with the betta than without. All the other plants did not have a significant difference in height. In conclusion, the data collected both refuted and supported my hypothesis.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature: *Robert Horner*

Date: 3/4/2024

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.