



## 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: The Effect of Various Vinegar Rinse Concentrations on the Shelf Life of Strawberries

Finalist's Name: Julia Muro

School and City: North Middle School, Colorado Springs

Sponsor's Name: Sarah Muro

Category: Micro & Molecular Biology (MCRO)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

The purpose of this project was to determine which vinegar/water ratio in a rinse will allow both organic and non-organic strawberries to have the longest shelf life, and whether or not the strawberries should be stored in an airtight or breathable container. I hypothesized that the most effective water/vinegar ratio would be 375 ml vinegar to 1125 ml water, and the strawberries should be stored in a breathable container.

This experiment involved having four groups of five jars that each contained eight strawberries. The groups were - nonorganic with no lid, nonorganic with a lid, organic with no lid, organic with a lid. Within each group, each of the strawberries in the five jars had a different pretreatment. The pretreatments were - no treatment, rinsed in water, rinsed in a 1/4 vinegar to water ratio, 1/3 vinegar to water ratio, and 1/2 vinegar to water ratio. The health of the strawberries was recorded every three days for 15 days.

The data collected supported the hypothesis that the 375 ml vinegar to 1125 ml water ratio is the ideal ratio. However, the closed container is better than an open container. The results show that closed containers are best, regardless of rinse type for non-organic strawberries. From this result, strawberry producers should ship all strawberries in airtight containers. Furthermore, organic strawberry producers should not only package their strawberries in airtight containers, but they should also coat the strawberries in a 375 ml vinegar/1125 ml water solution.

*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:

*Julia Muro*

Date: 3-4-24

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 your Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.