Fungi Strength

Gonzalez, Josie (School: Eastern Alamance Highschool)
Elam, Kallie (School: Eastern Alamance High School)

Concrete bridges and structures generally are known to have cracks over time regardless of the size or weight due to the concrete shrinking as it dries. However to what extent are those cracks safe to keep and how much weight can the structure hold with a few cracks? This past year there have been two bridges collapse both known to have cracks, however, these cracks were not linked directly to the collapse of the bridges. This brought about the question, is there any way to fix the cracks that have been created in the concrete structures without completely tearing down the structure and closing roads? Recently scientists have found a possible way to mend the cracks without destroying the structure and completely rebuilding it thanks to the help of fungi. When there are cracks in the concrete the fungal spores are able to germinate in favorable conditions. The fungal spores create a thread-like structure weaving through and mending the cracks. In order to test this, we created an experiment where we made three types of 2x2x12 in. blocks. One with just concrete, one with a fungus called Eurotium Chevalieri and another with Aspergillus Flavus spores. When the test was complete we found out that choosing the right type of fungi is important because one of the concrete blocks with the Aspergillus Flavus fungi made it stronger but the Eurotium Chevalieri made it significantly weaker with the regular concrete in the middle. Showing that fungi could help to mend cracks within the concrete.

Awards Won: