



# CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

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<b>Project Title</b> <b>Building a Sound Barrier</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to determine which type of fencing would be the most effective at reducing noise: wood, rock and mortar or strawbale, so that we could build a fence of the chosen material in the front of our house.</p> <p><b>Methods/Materials</b> I used an airhorn to create a consistent noise, a battery-operated sound level meter to record the decibels of the noise, and three types of fencing: wood, rock and mortar, and strawbale.</p> <p>The procedure was to find three fences approximately the same height, use the airhorn to create a consistent noise in front of each fence, and use the sound level meter to record the decibels. I then went one foot in back of each fence and had my grandfather use the airhorn to make the noise while I used the sound level meter to take the readings. To be as consistent as possible, the airhorn was used for the same amount of time on each reading. I took ten readings in each place and used the averages to calculate the percentage decrease in decibels to determine which fence was the most effective at reducing noise.</p> <p>It should be noted, I found a wood fence almost identical in height to a rock and mortar fence, which made those readings consistent. Unfortunately, the only strawbale fence I could find was significantly taller, so my uncle helped me construct a "makeshift" strawbale fence out of just the strawbale (which did not have the stucco encompassing the straw), to ensure the fences tested were the same height.</p> <p><b>Results</b> The results showed that wood fencing was the least effective at reducing noise. Rock and mortar and strawbale were fairly close, but ultimately, the strawbales, even without the stucco, were the most effective. It can be reasonably assumed that had the strawbale fence been complete, with the stucco, it would have been significantly better at reducing the noise.</p> <p><b>Conclusions/Discussion</b> My results supported my hypothesis that strawbale fencing would be the most effective at reducing noise, and helped us determine this would be the best choice for our house. My research and project made clear that strawbale fencing and homes are not only sustainable, but also very affordable and effective at reducing noise.</p>	
<b>Summary Statement</b> My project is about finding a sustainable and affordable fencing option to reduce the noise in front of my house.	
<b>Help Received</b> My grandfather helped me use the airhorn while I recorded the readings; my uncle helped me construct a strawbale fence and my mother proofread my work.	