



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Atticus J. Humphrey</b>	<b>Project Number</b> <b>S1008</b>
<b>Project Title</b> <b>Bromelain Feed Supplement: A Pollution Mitigation Strategy</b>	
<b>Abstract</b> <b>Objectives/Goals</b> This project sought to determine the bioremediation ability of Bromelain enzyme to reduce nitrogen, potassium, and phosphates from chicken manure. <b>Methods/Materials</b> The test chickens were divided into 4 test groups of 25 subjects each. All test subjects were weighed on day 1 and at day 15 to monitor animal health. Feed modification consisted of mixing various concentrations of Bromelain enzyme (0.5g, 1.0g, and 1.5g) added to 2500g of chickenfeed. Each group received feed once daily. Manure was collected once daily. Samples were dried at 90°F for 48 hours and homogenized. Inductively Coupled Plasma (ICP) optical emission spectrometer was used for phosphate and potassium analysis. Homogenized manure was analyzed LECO Machine for nitrogen quantity. <b>Results</b> The chickens fed with the 0.5g of bromelain had the greatest reduction in phosphates at 16.4 pounds per ton and in potassium at 17.4 pounds per ton while the control had the highest amount of nitrogen at 31 pounds per ton. The 0.5g of bromelain also showed the greatest weight gain at 4,607g when compared to the control at 3,521g. <b>Conclusions/Discussion</b> Bromelain enzyme does not reduce pollutants when compared to enzymes like protease. Bromelain enzyme supplement had a secondary, unexpected effect of increasing chicken growth and meat production. Further study is needed to determine if Bromelain enzyme supplementation increases productivity of laying hens or increased size in broilers.	
<b>Summary Statement</b> I focused on indentifying feed amendments that reduce pollution from chicken manure.	
<b>Help Received</b> I recieved guidance from Mr. Aalto on how to run the statistics of my results.	