



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Alex J. Thompson	Project Number J1334
Project Title Do Different Types of Manure Affect the Growth of Microorganisms?	
Objectives/Goals The purpose of this experiment is to find out whether or not the different types of manure affect the growth of micro-organisms.	
Abstract	
Methods/Materials 1)Collect the samples of steer, goat, pig, sheep, chicken, and rabbit manures. 2)Dilute the manures by taking one gram of manure and adding it to nine mil. of water in a testing tube. Then take one mil. of that dilution and add it to nine more mil. of water. This is a 1:100 ratio dilution. 3) Using an eyedropper and a spreader apply each dilution to both agar plates. 4) Seal the agar plates with parafilm and put them in the incubator for 24 hours. 5) After 24 hours, take the plates out of the incubator and and count the micro-organisms growing. Do this by dotting the colonies with a sharpie. 6) Put 10 grams of each manure in the oven until they are completely dry. 7)Weigh the manure when it is completely dry using a triple-beam balance scale. 8) Find the micro-organisms growing in the actual dry manure itself and noy the water in the manure that may also have micro-organisms growing.	
Results It was found that the rabbit manure ranked the highest in the Nutrient agar, and it had the most micro-organisms growing. The goat manure had the lowest count on the nutrient agar plates. In the Potato Dextrose Agar Plates the goat manure had the highest count of micro-organisms and the sheep had the lowest. Each type of agar plate grew a different type of micr-organism which could account for the goat being the highest and the PDA and the lowest in the nutrient agar. In the end, the rabbit and chicken maure had the highest overall ranking.	
Conclusions/Discussion In conclusion, the rabbit and chicken manures had more micro-organisms growing than any other animals. This isn't what I had expected. The ruminant animals have larger digestive systems, which led me to think that it would allow the manure more time to pick up micro-organisms. This didn't prove my hypothesis correct. These unusual outcomes may have been caused by something as little as the manure laying in a different position when it was collected to the food being digested differently. This may have also been why the goat manure came out first and last in the two different categories.	
Summary Statement My project is focused on trying to find out if different types of manure affect the growth of micro-organisms using two different agar plates.	
Help Received Mr. Joe Nunez of the Kern County Livestock Advisory Office helped me with the math; Mother and Father helped me with board.	