



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Bryce A. Flocks	Project Number J1616
Project Title A Comparison of the Effectiveness of Organic Worm Castings and Non-Organic Fertilizers in the Growth of Annual Rye Grass	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To compare the effectiveness of organic worm casting fertilizer to two non-organic fertilizers in the growth of Annual Rye Grass. If it can be shown that worm castings are an effective fertilizer, then it is hoped that individuals and also municipal waste facilities will be encouraged to benefit the environment by recycling plant material and soiled paper to create worm castings for home and agricultural use.</p> <p>Methods/Materials Methods: Obtain materials. Fill trays with equal amount of soil except tray labeled worm casting (50% soil and 50% worm castings). Trays equally seeded and exposed to sunlight. Trays labeled: No-Fertilizer, Peters, Miracle-Gro, Worm castings. Mixed Miracle Gro and Peters per instructions. Fertilized trays labeled Miracle-Gro and Peters every two weeks and at the same time watered other two trays with equal amount of water. Trays also equally watered by rainfall and as needed. Clear plastic tubs (mini green houses) placed over trays until seed germination to keep birds from eating seeds and to encourage germination in cold weather. Measure and observe growth of grass in each bin every two weeks after germination. Record data in notebook. Materials: Soil from under oak tree, Miracle Grow lawn food, Peters all purpose plant fertilizer, Worm castings from my worm bin that includes food scraps and paper scraps, Four black plastic planting trays, Annual Rye Grass seeds (<i>Lolium multiflorum</i>), Seed measuring cup, Ruler, Plastic bins (mini -green houses), Measuring spoon, Camera, Film, Water, Four one-gallon containers for water and for Miracle-Gro and Peters fertilizers diluted per instructions.</p> <p>Results Worm castings in a 50% soil to 50% worm casting mix encourage more growth of Rye Grass over a four-week period from germination when compared to Peters and Miracle-Gro non-organic fertilizers and when compared to the control. The grass growing in the worm castings grew 82.26% taller than in the control (non-fertilizer) measured at the end of the experiment. The grass growing in the Peters grew 50% taller than in the control. The grass growing in Miracle-Gro grew 25% taller than in the control.</p> <p>Conclusions/Discussion Worm castings are an effective fertilizer and good for the environment. If individuals and waste facilities recycle plant food scraps and soiled paper into worm castings, this will reduce the amount of waste that is now filling up these facilities, saving valuable land.</p>	
Summary Statement This project compares the effectiveness of organic worm castings to two non -organic fertilizers in the growth of Annual Rye Grass.	
Help Received My mom and dad helped me put my board together and proofread my report. My teacher, Mr. Steely taught me how to use Excel spreadsheets.	