# CALIFORNIA STATE SCIENCE FAIR
## 2007 PROJECT SUMMARY

**Name(s)**
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**Project Number**
**S1417**

**Project Title**
# Microscopic Analysis of Mushroom Spores under a Variety of Conditions

**Abstract**

**Objectives/Goals**
The purpose of my experiment was to observe the effects of contaminants such as scraps of food on the development of organisms (in this case, mushroom spores). I believe that the scraps of food will prevent any mushrooms from growing or at least delay their growth rate.

**Methods/Materials**
11 containers were filled with approximately equal amounts of different food wastes. Mushrooms were grown under identical environmental conditions and observed in regards to their growth patterns. Samples from the fully grown mushrooms were taken and observed under a microscope. The spores were introduced to water, salt, and calcium nitrate and their reactions were recorded.

**Results**
The pH levels of the soil after a few weeks of being introduced to the wastes were within one or two increments of the pH levels of the wastes. Mushroom growth was delayed about one week from the average maximum growth expected timeline. When observed under the microscope, water made the spores separate quickly, calcium nitrate made them separate slowly, and salt caused them to remain stable.

**Conclusions/Discussion**
The liquid wastes did not have a large effect on the mushrooms because they either evaporated or just ran through the containers. The solid (and powder) wastes had a larger impact on the mushrooms because they were stuck in the soil and had to disintegrate within the compost. The waste that emitted an odor (number 7) attracted flies, which laid eggs and which eventually was the cause of the maggots and disruption of growth. Most of the mushrooms# growth patterns were only changed by about one week, which was due to the different pH levels. However, the high pH level of container 11 and the maggots on container 7 halted the growth. Mushrooms, therefore, have varied pH levels in which they can grow, but extreme levels (very acidic or very alkaline) can cause them not to grow, to grow at a very slow pace, or to grow with possible defects.

**Summary Statement**
My experiment studies the effects that different food wastes have on the spore growth of mushrooms.

**Help Received**
Science teacher, Mrs. Flagan gave suggestions; Mother helped glue some posterboard sections; Mushroom Kit obtained from Pulpit Rock (ordered from Carolina catalogue).