



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Taimi M. Jacobson	Project Number J1624
Project Title Is Spinach Made in the Shade?	
Abstract Objectives/Goals Does the amount of light affect the germination of spinach seeds? Methods/Materials Spinach seeds were planted in individual "cells" in a styrofoam germinating tray. To create different light strengths, shade cloths that block out in 50%, 75%, or 90% of the sunlight were used. To get direct sunlight (100%), no shade cloth was also used. Results Fourteen seeds germinated in Tray A (direct sunlight), 5 in Tray B (50% shade cloth), 8 in Tray C (75% shade cloth), and 3 in Tray D (90% shade cloth). Conclusions/Discussion As the seeds germinated, it was observed that the hypothesis was wrong. It was thought that spinach would not germinate to its fullest under the direct sunlight, but under the 50% shade cloth. With this information it was determined that direct sunlight provided the best germination, while the rest of the light conditions were far behind. There are four possible explanations as to why the spinach germinates best without the shade cloth. The first is that spinach seeds require direct sunlight. The second is that the soil must reach a certain temperature and the shade prevents the sunlight from heating up the soil. A third explanation could be that the repeated wetting and then drying out of the soil is a factor that the spinach seeds may prefer; for example, this might prevent the growth of harmful microorganisms. Last, the shade cloth helped create an atmosphere that was both damp and still, which would promote the growth of potentially harmful microbes. As for the real life implications of this experiment, if the process of germinating spinach could be improved just a little bit, it will save money, water, and make land use more efficient. A faster germinating spinach plant would affect the lives of many people who work with or around spinach, such as farmers, chefs, grocers, people who make dye out of its green color, and even the people who drive the large trucks that transport the spinach. A little improvement in the growth of spinach will go a long way, and might even help feed thousands all over world. I would like to suggest future experiment in which the conduction of the light remains constant, but such factors as ventilation, soil sterility, temperature and degree of humidity are varied.	
Summary Statement The germination of spinach seeds under various natural light conditions.	
Help Received Father helped type report; Mother helped drill holes and build in wooden shade support frame.	