



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Natalie L. Epstein	Project Number 35549
Project Title The Effect of Seed Species and Expiration Date on Germination Rate	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project was to determine if the expiration date of a seed, and the type of the seed, has an effect on the seed's germination rate.</p> <p>Methods/Materials 3 different species of onion seeds and 3 different species of pea seeds were chosen for the experiment. 18 expired (2014) seeds of each species was obtained and 18 current (2015) seeds of each species was contained. Each seed was planted individually in a plant flat with nutritious seed mix, with identical conditions that were optimal for all the plant's growth. They were given sunlight and watered daily. The germination was counted every day for proper data collection.</p> <p>Results Expired seeds had a germination rate of 6-30% lower than current seeds with only one exception. The average difference between the 2014 seed germination rate and 2015 seed germination rate was 16.67%, with the 2015 seeds having more germination. The onions germinated less than the peas did with both years, with the Alaskan pea specifically having 100% germination both years.</p> <p>Conclusions/Discussion Fresh seeds have a healthy embryo whose cells are filled with water. Old seeds have lost water in the cell tissue and the embryo starts to shrivel, which is why germination rates drop the older the seeds are. Onions and peas are both seeds with some of the quickest dropping germination rate after their expiration date, and they also both have a life expectancy of only one year. Alaskan peas contain less sugar than other pea species. This causes them to germinate and mature earlier than other pea plant cultivars. According to this data, if you want a consistent germination rate of at least 90%, then current seeds are essential for success.</p>	
Summary Statement My project determines the effect of expiration date on the germination rate of seeds.	
Help Received A local seed shop owner helped me decide which seed species to use and provided the materials.	