Cryopreservation and Germination of Pisum sativum

Morris, Brooklyn

The purpose of this project is to determine how the temperature at which frozen Pisum sativum (pea seeds) are reheated after being frozen at subzero temperatures affect their ability to germinate and grow. The process of cryopreservation is the act of freezing cells, tissues, or any other substances with subzero temperatures, using a chemical such as liquid nitrogen for long term storing or preserving. Cryopreservation of plant seeds could benefit people because they would be able to freeze their own food and plants. The world's population is growing at a fast rate. Cryopreservation will allow food to be frozen and preserved for longer periods of time, resulting in the resources needed to provide food for virtually everyone in the world. In this experiment, pea seeds were frozen with liquid nitrogen, stored for a specific period of time, and then cooked in a crock pot full of water at 20, 30, and 40 degrees Celsius for one hour. The seeds were then placed in a wet paper towel in a plastic bag and left to germinate for one week. From the data collected, 30 degrees turned out to be the most efficient temperature to reheat the pea seeds. It was also found that the seeds that were frozen and reheated grew faster and taller than the seeds in the control group. Recommendations for further experimentation could include reheating the seeds for different periods of time. For example, fifteen minutes, thirty minutes, forty-five minutes, and one hour. One could also test different types of seeds.

Awards Won: