

Comparison of Traditional and Innovative Techniques to Solve Technical Challenges

Although NASA has an adequate food system for current missions, research is required to accommodate new requirements for future NASA exploration missions. The Inadequate Food System risk reflects the need to develop requirements and technologies that will enable NASA to provide the crew with a safe, nutritious and acceptable food system while effectively balancing appropriate resources such as mass, volume, and crew time in exploratory missions. As we go deeper into space or spend more time on the International Space Station (ISS), there will be requirements for packaged food to be stored for 3 – 5 years. New food packaging technologies are needed that have adequate oxygen and water barrier properties to maintain the foods' quality over this extended shelf life.

NASA has been unsuccessful in identify packaging materials that meet the necessary requirements when using several traditional routes including literature reviews, workshops, and internal shelf life studies on foods packaged in various packaging materials. Small Business Innovative Research grants were used for accelerating food packaging materials research with limited success. In order to accelerate the process, a theoretical challenge was submitted to InnoCentive resulting in a partial award. A similar food packaging challenge was submitted to Yet2.com and several potential commercial packaging material suppliers were identified that, at least partially, met the requirements. Comparisons and results of these challenges will be discussed.