ISU team flies on Weightless Wonder, with help from ISGC

A team of Iowa State University students, supported in part by the Iowa Space Grant Consortium, went to the Johnson Space Center in Houston in July to test, aboard NASA's KC-135, the space blender they had designed. The team was participating in NASA's Reduced Gravity Student Flight Opportunities program.

The students—David Chipman, Kevin Schroeder and Clayton Neumann, mechanical engineering, Jonathan Gettler, electrical engineering, Dustin Lunde and Russ Uthe, computer engineering—designed and built a blender that can operate without the benefit of gravity to pull food toward the blades. Their space blender uses a roller that moves back and forth like a rolling pin to crush food.

Team CyMix, as they came to call themselves, focused on processing soybeans, a product already being grown on space stations and shuttle missions, that has multiple applications in tofu, soymilk and other soy products.

In Houston, the team underwent physiological training to prepare them for the parabolic flights on the KC-135, affectionately known as the Weightless Wonder. Airborne trials took place on their last two days at Johnson Space Center. During each flight, there were approximately 30 parabolas, or intervals of simulated weightlessness. The blender was set up on one parabola and then tested during the next one, and this sequence was repeated.

"Running the experiment during the flight was a little more challenging than expected," said Chipman. He pointed out that anything that wasn't attached to the blender or to the airplane floated away. "That was really cool, but it can pose a challenge when you are running an experiment!"

"We noticed that we weren't getting as much force as we wanted from the blending head during the first flight, so we adjusted our spring tension on the roller for the second flight, and that seemed to do the trick," Chipman said. "Overall, the experiment went well, and we were able to get good data from both flight days." The blender worked the way the team had designed it and was able to effectively blend soybeans in microgravity.

Team CyMix in front of the retired KC-135 at Ellington Field in Houston (l.-r.): David Chipman, Dustin Lunde, Clayton Newmann, Jonathan Gettler and Kevin Schroeder. Russ Uthe is not pictured.

The experiment generated quite a bit of interest among the NASA test directors and reviewers. "Experiments like the one we did are necessary as NASA looks to long-term space missions to the moon and Mars," Chipman explained. "We felt pretty proud of the experiment."

The team considers the space blender that flew aboard the KC-135 to be a prototype and hopes to eventually produce an improved model. "We are entertaining the idea of submitting an experiment for next year that would have more functions and be more compact," said Chipman.

ISGC sponsors additional team

The Iowa Space Grant Consortium helped to sponsor another Iowa State University team that participated in the Reduced Gravity Student Flight Opportunities program. This team, consisting of four engineering students and one alternate, traveled to the Johnson Space Center in March and launched a spacecraft called CyCADET (Control and Attitude Determination Evaluation Testbed). For details about their experience, visit our website at www.ia.spacegrant.org/NEWS/newsbrief1504.htm.

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Space Explorers Inc., provide the basis for much of our program. In addition, the annual Space Week Science Challenge was initiated, in which classes listen to ***Earth & Sky*** radio broadcasts during Space Week, take part in coordinated activities provided by the ISGC, and then take a grade-appropriate quiz over the materials. The winning classroom receives a telescope, a trip to one of the ISGC-affiliate science museums and teacher inservice on science education.

Support to ISGC-affiliated science museums is the main component of our education for the general public program. The ISGC also participates in the annual state aviation fair and supports prime-time public television broadcasts of aerospace-related programs.

"We are pleased with the breadth of the ISGC programs, the depth of reach in the important areas of undergraduate programs and precollege education, and the effectiveness of our plans," summed up Byrd.

E-SET pilots DOE/USDA curriculum

Iowa's E-SET program will pilot a new curriculum on light for the elementary grades this fall. Developed by the National Energy Education Development project for the U.S. Departments of Energy and Agriculture, the curriculum highlights the science concepts of light as well as the practical aspects of light in our lives. Lessons focus on light energy, light properties, light production and energy conservation.

The piloting for the two-week curriculum will be done by the County Extension Office in Louisa County and by 4-H after-school programs in other Iowa counties, as well as in other states across the country. The curriculum will be altered on the basis of the piloting and then released to 4-H and schools, according to Jay Staker, E-SET program director and ISGC associate director. It will be used in classrooms, after-school programs, clubs and in schools for dependents of military personnel.