

150 years



News Release

BASF sponsors space farming research project to foster innovation and entrepreneurship

- **BASF works with students to grow crops in microgravity conditions**
- **The take-off to the International Space Station (ISS) is planned for December 2015**
- **A German student project has been included in NASA's educational program for the first time**

Ludwigshafen, Germany – May 26, 2015 – Is it possible to produce large quantities of high quality vegetables on a space station, about 320 kilometers away from earth? To answer this question, three twelfth-grade students from the agricultural program at the Edith Stein School in Ravensburg, Germany, set up a research project to examine how crops can be cultivated in the microgravity of space. The research trial is scheduled for take-off to the International Space Station (ISS) by the end of 2015, and will have the scientific and financial sponsorship of BASF.

“We are excited about this project and about working with forward-thinking young people who strive for groundbreaking ideas and innovation. With our 100 years of experience in agriculture, it has been a thrilling challenge to investigate what could come next and how to achieve the ultimate goal of growing and reproducing plants on a space station,” said Dr. Harald Rang, Senior Vice President Research & Development, BASF Crop Protection.

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Groundbreaking research project to yield insights into the understanding of plant cultivation

Under normal gravitational conditions on earth, cuttings can be used to reproduce plants. Roots and leaves can grow and further develop from these cuttings. The roots grow towards the earth's center, in the direction of gravity, and the sprouts, in contrast, grow towards their light source, the sun.

If cuttings could be used for the reproduction of plants in microgravity, this would be a major step forward in the effort to supply long-term space flights – e.g. to Mars – with food from space farming. However, until now, experiments conducted in microgravity have focused on studying the growth of the seedlings' roots. In contrast to seedlings, cuttings do not have a root system. Thus, the question the students are attempting to answer with their experiment is simple but groundbreaking: Can cuttings grow their own root system without gravity to guide them?

Experimental set-up supported by BASF's fungicide research

To ensure the success of the experiment, the student research team is currently developing an appropriate experimental design for the ISS. BASF is providing knowledge on how to keep the plants healthy and free from fungal disease during the foreseen 30 days in the ISS environment. The students will do an internship with experts at the BASF Agricultural Center in Limburgerhof, Germany, before conducting trials at Kennedy Space Center laboratories in Florida.

This is the first German student project to be included in NASA's educational program via the Space Act Agreement with NanoRacks.

About Edith Stein School

The Edith Stein School Ravensburg & Aulendorf is a vocational school more than 20 different types of educational programs. The school has about 2,000 students and more than 140 teachers. Since a couple of years the Edith-Stein-Schule is one of the 9,000 UNESCO project schools worldwide. A team of teachers supports talented students for scientific competitions like "Jugend forscht". In recent years

they have been highly successful even ranging among the highest on the federal level. More information on Edith Stein School is available on the Internet at www.ess-rv.de.

About BASF's Crop Protection division

With sales of more than €5.4 billion in 2014, BASF's Crop Protection division provides innovative solutions in crop protection, seed treatment and biological control as well as innovations to manage nutrients and plant stress. Its portfolio also includes products for turf and ornamental plants, pest control and public health. BASF Crop Protection is a leading innovator that partners with growers to protect and enhance crop yields, enabling them to produce high quality food more efficiently. By delivering new technologies and know-how, BASF Crop Protection supports growers to make a better life for themselves, their families and communities. Further information can be found on the web at www.agro.basf.com or on our [social media channels](#).

About BASF

At BASF, we create chemistry – and have been doing so for 150 years. Our portfolio ranges from chemicals, plastics, performance products and crop protection products to oil and gas. As the world's leading chemical company, we combine economic success with environmental protection and social responsibility. Through science and innovation, we enable our customers in nearly every industry to meet the current and future needs of society. Our products and solutions contribute to conserving resources, ensuring nutrition and improving quality of life. We have summed up this contribution in our corporate purpose: We create chemistry for a sustainable future. BASF had sales of over €74 billion in 2014 and around 113,000 employees as of the end of the year. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). Further information on BASF is available on the Internet at www.basf.com.