

Editor's Notebook



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Nebraska Researchers Want To Grow Crops On Mars

By Jim Ruen, Contributing Editor

Researchers at the University of Nebraska-Lincoln (UNL) are focusing on growing plants in space. The Space, Policy, Agriculture, Climate and Extreme Environment (SPACE2) project hopes to grow the first acre of corn or soybeans on Mars. It won't be easy.

Challenges include everything from 38% less gravity—which affects water flow and planter downforce—to the planet's surface conditions. Previous UNL research attempted to grow soybeans in imitation lunar surface materials. Known as regolith, the material is a mixture of rock fragments, dust and glass-fused minerals. Doctoral student Cassie Palmer found that the soybean seeds struggled to sprout and root. The lack of pores in the lunar "soil" caused it to solidify, preventing root caps from migrating and taking up nutrients.

A similar study involving Martian regolith was even less successful. The imitation Martian materials produced no growth at all.

Palmer noted that even if the Martian soil could support plant growth, high levels of perchlorate compounds would make them toxic. The compound destroys lymph nodes and thyroid glands.

She suggests introducing microbes to transform the perchlorates into oxygen, water and chloride ions.

The initiative, led by 28 UNL faculty and researchers, aims to address those and other issues. Yufeng Ge and Santosh Pitla head it up. Ge is a professor of biological systems engineering. Pitla is an associate professor of biological systems engineering. Ge has specialized in sensors, and Pitla spearheaded the engineering of Flex-Ro, an autonomous planter (Vol. 47, No. 5).



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The consortium wants UNL to house the first center devoted to the study of agriculture in space. Pitla expects robotics to play a key role in the future of agriculture in space.

"Before humans go to Mars, we'll want some essential resources there, and for that, we'll send robots," Pitla told Nebraska Today. "Think about a greenhouse on a spaceship that's landed on Mars, and it's already started growing food. You need a fully automated, robotic farmer that's doing those things even before humans arrive."

Other production systems, such as hydroponics and aeroponics, would be more likely to be the initial food production systems. Hassan Fazayeli is a Ph.D. student in biological engineering, exploring both indoor systems.

"We're trying to resolve engineering challenges with indoor agriculture to support human activities in extreme environments," says Fazayeli. "It's even more important in space than on Earth to produce more output with fewer inputs."

Ge admits that growing vegetables and greens that don't require processing would be more energy efficient. However, he points out that corn and soybeans may still find a place, in part for their residual, long-term benefits.

"Yes, the first generation (of regolith) is really harsh for plants," Ge told Nebraska Today. "But hopefully, when you keep adding the corn stalks, soybean residues or some of the waste coming from other processes, you can improve it to the point that you can actually reasonably grow the plants."

The primary challenge faced by agriculture in space research is securing funding.

"We're actively looking for support," notes Fazayeli.

Contact: FARM SHOW Followup, Yufeng Ge, University of Nebraska-Lincoln, CHA 211, Lincoln, Neb. 68583 (ph 402-472-1413; yge2@unl.edu).



Smith holding a saw from the 10-tool kit that was part of the FARM SHOW giveaway this spring.

DeWalt Tool Giveaway Winner

Our FARM SHOW DeWalt tool giveaway winner is John Smith from Glen Haven, Wis. John is a retired railroad yardmaster and Vietnam vet. He stays occupied by working on antique vehicles and maintaining his woodland properties. He's been a long-time FARM SHOW reader.

"I've enjoyed the stories on what to do with an old school bus," says Smith.

Smith says he will use the tool kit around his property, but noted, "One of the tools is a Bluetooth speaker. I don't know what that is, but if I had one, I'd be sure to consult my dentist!" Congratulations, John. Stay tuned for our next giveaway.



While admitting the decision to stop production of the narrow-cab W900 was difficult, Kenworth believes it's a necessary one to keep step with the coming trucking era.

Kenworth Ends Production Of Iconic W900

By Bruce Derksen, Contributing Editor

The record for the longest heavy truck model to remain in continuous production is reaching its end. Kenworth recently announced that all production of its Class 8 trucks, including the cherished W900, would soon cease.

The historic model W900 first rolled off the assembly line in 1963, and throughout the decades, has maintained much of the same basic body style and flair. Known for its classic long hood and conventional style, it became arguably the most iconic truck in North American trucking history.

"The W900 is truly historic and has helped shape North American trucking culture and tradition as we know it today," says Kenworth's assistant general manager for sales and marketing, Kevin Haygood, in a company press release.

While admitting the decision to stop production of the narrow-cab W900 was difficult, Kenworth believes it's a necessary one to keep step with the coming trucking era.

The company decided to end its Class 8 truck production, including the narrow-cab T800 model, introduced in 1986,

and the heavy-duty C500 model, which first appeared in 1972, due to new emissions regulations and component limitations as the industry advances with more efficient technologies.

Kenworth's W990, presented in 2018, is replacing the W900, offering an updated design with a wider cab and a more aerodynamic design.

W900 truck orders will be closed in late 2025. Kenworth urges dealers and customers to place final orders for legacy trucks without delay.

"Often seen at truck shows, featured in movies and on TV, and shown at other events, it's an iconic truck that's cherished for its classic styling by our customers and truck aficionados," Haygood says. "While production of these trucks is coming to an end, we look forward to seeing them on our roads and at truck shows for many years to come."

Contact: FARM SHOW Followup, Kenworth Trucks, 10630 N.E. 38th Pl., Kirkland, Wash., 98033 (ph 425-828-5000; www.kenworth.com).

Points To Ponder

- Irving Berlin dedicated all royalties from "God Bless America" to a fund of the same name, specifically for the benefit of youth organizations like the Boy Scouts and Girl Scouts in New York. More than \$10 million has been raised over the years.
- When Kentucky Fried Chicken expanded its restaurants into China in the 80s, their slogan "It's finger lickin' good!" was mistakenly translated in Mandarin to "Eat your fingers off."
- More than 20% of the world's freshwater is in the Great Lakes.
- An ostrich can run faster than a horse.
- In Japan, ramen noodles are a fuel source for more than just people. The Amaterasu Railway's sightseeing train uses biodiesel made from leftover ramen oil.
- There are 293 ways to make change for a dollar.
- You can obtain a degree in Viticulture and Enology, or the cultivation of grapes and the science of winemaking, at Cornell University.

Liberty Quotes

"Rejoice with your family in the beautiful land of life."
Albert Einstein

"Thinking is difficult, therefore let the herd pronounce judgment!" *Carl Jung*

"Authority without wisdom is like a heavy axe without an edge, fitter to bruise than polish." *Anne Bradstreet*

"Every great cause begins as a movement, becomes a business, and eventually degenerates into a racket." *Eric Hoffer*

"I have never known much good done by those who affected to trade for the public good." *Adam Smith*

"Everyone may seek his own happiness in a the way that seems good to himself, provided that he infringe not such freedom of others to strive after a similar end as is consistent with the freedom of all according to a possible general law." *Immanuel Kant*

"When we lose the right to be different, we lose the privilege to be free." *Justice Charles Evans Hughes*

"Our coins bear the words 'In God We Trust.' We take the oath of office asking His help in keeping that oath, and we proclaim that we are a nation under God when we pledge allegiance to the flag. But, we can't mention His name in a public school or even sing religious hymns that are non-denominational...Christmas can be celebrated in the school room with pine trees, tinsel and reindeers, but there must be no mention of the man whose birthday is being celebrated. One wonders how a teacher would answer if a student asked why it was called Christmas." *Ronald Reagan*

Ole and Sven were working for the county. They were standing at the base of a large flagpole, looking up.

A woman walked by and asked what they were doing. "Ve're supposed tew find da height of dis flagpole," said Sven, "but ve don't have a ladder."

The woman took a wrench out of her purse, loosened the bolts at the base of the flagpole and lowered it to the ground. She then took a measuring tape from her purse, measured the flag pole and announced "Nineteen feet and six inches," and walked away.

Ole shook his head and laughed. "Ain't dat yust like a voman! Ve ask for da height and she gives us da length!"

Ole applied for a permit to build a fence on his property. The local inspector came out and said, "I've got some bad news for you Ole. Your farm is right on the state line and we've determined it's not in Minnesota. It's actually in Iowa."

Ole replied, "Dat's the best news I've had in a long time. I was just telling Lena dat I don't tink I can take anoder winter in Minnesota!"