

South Pole researchers expect to grow their own vegetables

By Blake Morlocki, Tuscon Citizen

TUCSON — At the South Pole, researchers really, really want to eat their vegetables. But they're impossible to get in the middle of a nine-month-long winter.



Strawberries will grow at a slower pace in the Food Growth Chamber.

By Tom Wornor,
Tyler Morning Telegraph/AP

Soon, however, they'll be able to grow their own.

The University of Arizona is working on the South Pole Food Growth Chamber Project, a self-contained greenhouse meant to grow food for Antarctic researchers and the first greenhouse to be shipped to the South Pole.

The 300-square-foot Food Growth Chamber can yield fresh vegetables at a rate of 10,000 heads of lettuce a year. Other produce, such as spinach and strawberries, will grow at a slower pace.

But the project also is seeding more ambitious dreams.

"We are interested in the South Pole because we are interested in going to Mars," said Gene Giacomelli, director of the University of Arizona's controlled environment laboratory.

Growing plants could be an integral part of any mission to the Red Planet, and no other environment on Earth resembles Mars more than the South Pole. Mars might even be more hospitable.

Astronauts on spacecraft heading out on the months-long flight to Mars could have to rely on similar greenhouses for fresh food.

"What they can't take with them, they will have to grow," Giacomelli said.

But first, the project will be sent south.

In October, the greenhouse will be shipped 9,000 miles to McMurdo Station, the coastal Antarctic research station 2,000 miles south of New Zealand. From there, it will be flown aboard a C-130 cargo plane 800 miles to the South Pole.

Then, a few hundred yards from the Pole, it will be reassembled inside the Amundsen Scott Research Station. The hydroponic greenhouse will yield fresh produce and psychological relief to the 200-plus researchers who live on the world's most forbidding piece of real estate, said Phil Sadler, a Tempe, Ariz., botanist and Antarctic veteran working on the project.

"The South Pole is just a miserable place," said Sadler, who has spent six years in Antarctica and several months of that at the South Pole.

The climate is cold, of course. Winter temperatures are 200 degrees Fahrenheit colder than Tucson at the same time of year. The air is thin; the station sits 9,000 feet above sea level on a sheet of ice more than two miles thick.

Researchers at Amundsen Scott are isolated on the glacier for eight and one-half dark months of the year. Aircraft landing skis freeze to the glacier any time except summer, Sadler said.

The 50 or so scientists who spend their winters at the research center can't get fresh produce and often must eat astronaut-style dried vegetables.

But researchers in such a forbidding environment tend to enjoy time off in the presence of plants. One-third of the Food Growth Chamber is set up to be a small lounge to take advantage of the psychological impact of the greenery.

"It's got full-spectrum light, it smells good, and it's got humidity," Sadler said.

The only other artificial light at the station is fluorescent or incandescent, like that inside an office.

And the research station's cold, dry air makes life an exercise in olfactory deprivation, so much so that catching a whiff of greenery is a pleasant distraction, Sadler said.

When Antarctic workers would fly back to New Zealand, the floral scents would be overwhelming, Sadler said.

"When we used to land in Christchurch, it seemed like we could smell every plant on the island," he said.