Cornell 281 corn goes even farther than expected

ITHACA, NY – The space shuttle, scheduled to take off from Kennedy Space Center in early June, will carry a corn variety from Cornell University for an experiment on plant growth in space.

Making the historic flight will be "Cornell 281," a popular Cornell corn variety in commercial use since 1978 in the northeastern United States. Highly productive, it is grown for grain or silage.

Part of a pilot program designed to introduce college students to space research, the corn experiment is scheduled to begin June 6. That's when the space shuttle will blast into earth orbit for five days, according to La Donna Montgomery of the Bionetics Corporation at the Kennedy Space Center. The firm will be conducting the experiment undere a contract with the National Aeronautics and Space Administration (NASA).

The aim is to examine gravity as a stress on plant growth, following a finding by scientists at the Boyce Thompson Institute for Plant Research located on the Cornell campus.

The finding was made in a study conducted by Carl Leopold, a BTI scientist, and Mordecai D. Jaffe, who was a visiting scientist at BTI in 1983. Jaffe is a professor at Wake Forest University in North Carolina.

Leopold says that when corn plants were given a changed gravity orientation, by holding them in a horizontal position, the amount of a cell-wall material known as callose increased in the tissue—a response scientists had never seen before. Cornell 218 was used in this study.

Based on the BTI study, Bionetics scientists decided to test the same Cornell corn in space, where gravity is zero, to see if a similar response would occur in weightless conditions, among other things.

Through Leopold and the New York Seed Improvement Cooperative, located near the Cornell campus, Bionetics scientists have obtained the Cornell 281 corn seed for the flight experiment.

News of the space test involving the Cornell corn came as a surprise to William D. Pardee, chairman of the department of plant breeding and biometry in the New York State College of Agriculture and Life S. Cornell.

"We are delighted that our corn can be helpful in this space research," he comments. "We thought Cornell 281 would go far, but this is further than we expected."

During the June flight, corn seedlings will be germinated in the shuttle's mid-deck locker known as the "Plant Growth Unit." If all goes well, one-half of the corn seedlings will be harvested and frozen in space after five days of growth in space. The other half will be harvested one hour after the shuttle returns to earth.

The tissue grown during the space flight will be compared with tissue from ground-based control treatments as well as samples from flight simulation treatments. These treatments will include the growth of seedlings in pots, in an environmental growth chamber mimicking the conditions in the shuttle's plant growth unit, and on plant clinostats, an apparatus that rotates plants to neutralize gravity.

The focus of the research is to determine several stress indicators, including cell size, shape, and callose deposition, according to Montgomery.

The Cornell corn variety was developed by Clifford Manchester and the late Clarence Grogan, both corn breeders in Cornell's department of plant breeding and biometry.

Soybean checkoff program helps find new markets

ST. LOUIS, MO – Times are tough for U.S. farmers. But it's said that tough times never last, tough people do. U.S. soybean farmers like Page Box, Jr., of Ripley, Tenn., are among the toughest.

Box is a part of a new breed of soybean farmer. These farmers are fighting tough economic times, and they have a unique weapon in their arsenal: the soybean checkoff program.

Through this program, Box and other farmers in 26 states invest a portion of their soybean income (one-half cent to two cents per bushel) in programs to improve their soybean profits.

Box says that farmer funds generated through soybean checkoff programs are invested in research, education, and promotion. In most states, farmers commit about one-half of their checkoff funds to market promotion programs of the American Soybean Association.

With its headquarters in St. Louis, the Soybean Association, through its 11 overseas offices, coordinates more than 200 market promotion projects in 76 countries.

"Soybean Association projects benefit the farmer," says Box.

• South America. Soybean Association projects replace demand for Brazilian meal and oil with demand for U.S. beans. The Soybean Association estimates that soybean and soybean product demand in Colombia, Venezuela, and Peru could grow from 1.2 million metric tons to 2.7 million metric tons...and U.S. soybean farmers may supply most of the market.

• Turkey. Farmer-funded Soybean Association efforts encouraged the Turkish government to lift heavy import restrictions on soybean meal. Last August, for the first time Turkey bought 77,000 metric tons of new crop U.S. beans. That's equivalent to 2.8 million bushels.

• Japan. The Soybean Association invests checkoff funds in poultry feeding trials which could substantially influence soybean meal use in poultry rations. Each one per cent increase in the amount of soybean meal used to feed poultry could increase meal demand by 110,000 metric tons. That's equivalent to 5.1 million bushels of soybeans.

Box backs his belief in the soybean checkoff with commitment to membership in the Soybean Association. In the past year, Box signed 128 new members to the Tennessee Soybean Association to lead the nation in recruitment efforts.

"Soybeans farmers have to work together to build markets," says Box. "We've got competition, and it only gets stronger when you produce fewer beans."

Box says that since 1979 when U.S. soybean production peaked, Brazil and Argentina have increased soybean production by 60 percent, and European production of sunflower and rapeseed increased 260 percent.

"We export about half of our soybean crop and we can't afford to lose markets," says Box. "With the soybean checkoff and the Soybean Association, we're going to come out winners."