

# Moon Anyone? Cake,



Supersize  
Vegetable  
Soybean  
Makes Its  
D e b u t

**Geneticist  
Thomas Devine  
inspects a Moon  
Cake soybean  
plant that is  
about 6 feet tall.**

**J**ust in time for the Chinese Moon Cake Festival this autumn, a new soybean variety named Moon Cake will have enough seed harvested for distribution to companies that may be awarded licenses to market it.

Moon Cake makes getting soy in your diet as easy as tossing peas into a salad. Growing to 6 feet tall—under the right conditions—Moon Cake is the first giant vegetable soybean worldwide. It is also the first vegetable soybean to be released by the Henry A. Wallace Beltsville Agricultural Research Center, where the plants were bred.

Vegetable soybeans, also called edamame (pronounced *eh-dah-MAH-may*), are a specialty, high-value, niche item, usually sold in health food stores. They are becoming increasingly popular in this country but are standard fare in Asian countries, where the large-seeded beans are cooked and salted. These soybeans are harvested when the pods are still green. Sometimes they are sold on the stem, in a bundle, to show freshness. Since the Moon Cake variety has longer stems with more pod-bearing nodes than usual, one stem can be cut into three or four sections, multiplying its value.

Moon Cake is named for an annual Chinese harvest festival during which people eat sweet cakes, often made partly with lotus or sesame seed and bean paste and generally shaped like the full moon the festival celebrates. People gather spontaneously in parks and on beaches, carrying candle lanterns, and watch the moon, which is said to be at its fullest and most beautiful in mid-autumn. The festival is held sometime in August or September. Festival-goers make a wish, since the “Man in the Moon” is a matchmaker in Chinese legends.

Geneticist Thomas E. Devine, with the Agricultural Research Service in Beltsville, Maryland, developed this vegetable giant. He named it Moon Cake to recognize the oriental roots of soybeans, as well as to associate the new soybean with the tasty foods eaten at the festival.

“Soybeans have been a major protein source in places like China, Japan, and Korea for centuries,” he says. “The large-seed edamame are eaten like green peas. You just boil them and press the beans out of the pod with your fingers. You can then add them to everything from salads to succotash, including mixed vegetables, soups, stir-fried vegetables, and casseroles.”

Moon Cake is the latest in a series of giant soybean plants Devine developed for release by ARS. “Its tall growth should make it especially valuable to organic farmers because it will help it shade out weeds,” he says. “That’s helpful for farmers who have to control weeds without using pesticides. For farmers

who sell only the pods, after harvest the leaves and stems can be left as high-protein forage for livestock—like sheep or goats. That makes it a dual-use crop.”

Devine bred the new variety from breeding stock he developed for three giant soybean varieties intended for forage: Donegal, Derry, and Tyrone. Soybeans are mainly used as a grain for livestock feed and human foods and, to a lesser extent, as a vegetable bean. Even less is used for forage—currently only 3 percent of soybeans grown in the United States.

The vegetable soybean is just as tall as the giant forage varieties. At 5 to 6 feet tall, it is almost double the usual height of soybeans. All the giant varieties were conventionally selected and bred for height and strong stems that are less likely to fall to the ground. “We did not use genetic engineering on any of the soybean varieties we developed,” Devine says.

Because of their height, all giant soybean plants leave more crop residue and provide better protection from soil erosion than conventional soybeans. Soybeans are generally known as plants that are hard on soils because they usually don’t leave enough residue to cover soil adequately.

Another advantage: “Moon Cake matures later than most vegetable soybeans, after the others have gone to market,” Devine says. “This extends the growing season for farmers.”

Devine received the ARS 2001 Technology Transfer award for pioneering the reintroduction of soybean as a forage crop. He has spent the past 20 years developing these giant varieties. He not only cooperates with other research and extension scientists around the country in evaluating the experimental lines, but also follows through by certifying the varieties under the Plant Variety Protection Act, an important step before licensing can occur. Then he gives technical guidance to the seed companies that license the exclusive rights to market them.

Moon Cake has been tested at ARS locations in Beltsville, West Lafayette, Indiana, and Jackson, Tennessee. It has also been tested by Virginia State University in Petersburg, Virginia. Companies seeking licenses granting rights for its production and sale are invited to apply.—By **Don Comis**, ARS.

*This research is part of Integrated Farming Systems, an ARS National Program (#207) described on the World Wide Web at [www.nps.ars.usda.gov](http://www.nps.ars.usda.gov).*

*Thomas E. Devine is at the USDA-ARS Sustainable Agricultural Systems Laboratory, 10300 Baltimore Ave., Bldg. 001, Room 126, Beltsville, MD 20705-2350; phone (301) 504-6375, fax (301) 504-6491, e-mail [devinet@ba.ars.usda.gov](mailto:devinet@ba.ars.usda.gov). ★*

STEPHEN AUSMUS (K10677-1)



**Pods of Moon Cake vegetable soybean developing on plants in the field.**