

# SPECIAL SOYBEANS FOR SILAGE

*These promising lines were bred specifically for use as a forage crop*



PHOTO: SCOTT BAUER, USDA/ARS

From the time soybeans were introduced into North America until well into this century, farmers grew the crop primarily for forage. Thanks to a breeding effort spearheaded by USDA geneticist Thomas Devine, this versatile legume could become a significant forage once again.

Earlier forage soybeans were unimproved lines from Asia used mainly for hay. Devine is developing lines that are especially well suited for silage.

He began working on silage soybeans in 1979 by crossing disease- and pest-resistant grain types with a vigorous, leafy hay type. Breeding and selection done since then have resulted in lines that can exceed 6 feet in height and yield more than 6 tons per acre of dry matter testing about 18 percent protein.

"We've had three lines on the front burner," says Devine, who works out of the Agricultural Research Service Weed Sciences Laboratory at Beltsville, Md. "One falls in Maturity

Group V, one is in Group VI, and the third is in Group VII. All three were released to the seed trade late last summer. Now seed companies will have to increase the seed supply before making these soybeans available to farmers."

**Flexibility.** "People who have tried these soybeans believe there are all kinds of things you could do with them," Devine says. "You could grow them alone or in a mixture with sorghum, pearl millet, or other grass species. In areas with good drying weather, the soybeans could be cut for hay and put up in large round bales for beef cattle. They could be cut and left on the ground for animals to graze, or they could be green-chopped. These legumes are warm-season-adapted and would offer farmers an opportunity to fill summer gaps in forage production."

The new soybeans have great potential as a silage crop, according to Devine. "Studies done in Wisconsin indicate that

they should make a very good silage," he says.

Beltsville researchers have used conventional forage equipment to harvest 3-acre plots of the soybeans. They were cut with a mower-conditioner, left for part of a day to wilt, then chopped for silage.

"The best time to harvest for maximum production of total digestible nutrients hasn't been conclusively determined yet," Devine says. "But I think it will be near the period when pods have swollen to three-eighths of an inch in thickness."

Silage soybeans could be grown using production systems similar to those used for conventional soybeans, according to Devine. "In tests, they've been planted in everything from 7-inch rows in Virginia to 34-inch rows in New York," he notes.

The three forage lines look much like any other soybeans until well into the growing season. "They're not distinguishable from ordinary soybeans until August, when there is a

*Despite standing 6 feet tall, Thomas Devine is barely visible in a sea of silage soybeans that he developed.*

growth surge," Devine explains. "Here in Maryland, they grow to 6 feet or more in height. In locations with fewer heat units, they grow shorter."

**Breathing room.** Silage soybeans would be well-suited for double-cropping with a small grain. "In our area, soybeans are harvested for grain in October," Devine explains. "You could harvest silage soybeans in September, which would allow you to seed small grains earlier."

The new forage soybeans would offer other advantages as well. "They wouldn't require nitrogen fertilizer, as corn does, and they would leave nitrogen for following crops to use," Devine explains. "They also have the potential to produce more protein per acre than corn, which would allow livestock producers to grow more of their own protein and reduce their costs for purchasing supplements."/George Sollenberger