

# Global Food Staple Crop has Multiple Uses in U.S.

*A subtropical crop, grown extensively around the world as an important food staple, may have multiple uses in the United States as a forage, a garden crop or edible landscape ornamental.*

John Sloan, a soil scientist with Texas A&M University, received a \$200,000 Southern Sustainable Agriculture Research and Education (SARE) grant to study the pigeon pea, a hardy, drought-resistant legume.

“The pigeon pea has so many purposes. As a soil scientist, I’m interested in its soil conservation benefits. The pigeon pea has deep roots that help with soil structure and loosen up compacted soils, creating water channels into the subsoil,” said Sloan, an associate professor with Texas AgriLife Research and Extension Center at Dallas. “For the purposes of the SARE grant, we wanted to look at pigeon pea as a forage for livestock producers.”

Sloan said that pigeon pea, when planted in the spring, will grow slowly throughout the summer and mature in late summer and early fall when other forage crops have gone dormant or died off. That creates opportunities to provide cattle an additional food source, especially during times of extreme drought.

## Pasture potential

Sloan and his colleagues studied how well the pigeon pea performed when directly seeded into pasture in the spring to enhance pasture productivity in late summer and early fall, as well as planted into a field after wheat harvest and grown to the flowering stage before being allowed to be grazed.

“One of the main purposes of the study was to determine if cattle would graze pigeon pea or ignore it in favor of grasses. We found that pigeon pea does well drilled no-till into Bermuda grass pastures. It grows slowly, so it won’t outcompete the grass, and cattle will graze on it just fine. They don’t discriminate,” said Sloan. “However, the results suggested that this is not the best way for farmers to utilize pigeon pea as a forage crop due to several reasons. Without some sort of soil



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preparation, the uneven surface of most pastures will prevent proper functioning of the no-till planter and result in loss of seed and an inadequate population stand. Next, the area where the pigeon pea is planted will have to be protected from grazing cattle until the plants have reached an adequate size. If allowed to graze the area immediately after planting, the pigeon pea plants will probably not survive beyond the first trifoliate leaf stage.”

Sloan said that a better way to use pigeon pea as a forage is to plant it after wheat harvest in July and then graze cattle on it when it matures to its flowering stage in September or October.

“Since it’s an indeterminate plant, it will continue to grow until the first frost kills it,” said Sloan. “You need rainfall to get the seed germinated, but once it germinates, the plant will grow well in hot, dry conditions. It grows well in marginal soils and in soils that aren’t that fertile.”

## For human consumption

Not only is Sloan studying the pigeon pea as a forage crop, he is also interested in the legume as a garden plant. The peas can be harvested and eaten green or as a dried bean.

“We planted more than 16 lines of pigeon pea in a community garden for two growing seasons and we had a lot of success with its performance. We were able to introduce the crop to a large pool of curious and potential customers,” said Sloan. “It can also be grown in landscapes as an edible ornamental. It’s a very nice-looking plant.”

Sloan said that certain varieties of pigeon pea also have potential as a biomass crop.

“We studied 20 lines from the International Crops Research Institute for the Semi-Arid Tropics and found three or four lines that produce a large amount of biomass,” said Sloan. “Calculations show that one plant on a per-acre basis can generate as much biomass as switchgrass or other biomass grasses.”

Sloan said that’s possible because the varieties have such a long growth cycle that they produce long stems and don’t set flowers.

Pigeon pea may also be useful in intercropping, where one crop is seeded within the rows of another, and as a cover crop to capture the nitrogen it fixes in the soil as a legume.

Additional project collaborators

include Jim Heitholt, a professor with Texas AgriLife Research; Harry Iyer, executive director of the Greater Dallas Indo-American Chamber of Commerce; Sue Metz, senior research associate with Texas Agricultural Experiment Station; Sharad Phatak, retired professor of horticulture at the University of Georgia; Srinivas Rao, USDA Agriculture Research Services (ARS) entomologist; and Dennis Ware, coordinator of Natural Resources Conservation Service (NRCS) Bluebonnet Resource Conservation and Development.

To learn more about the results of the study, “Pigeon Pea: A multipurpose, drought resistant forage, grain and vegetable crop for sustainable Southern farms,” visit the national SARE projects database and search by project number LS07-201.

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