

Research in Review

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One-third of East Texas acres suitable for alfalfa

OVERTON—About one-third of the acreage in a five-county East Texas area is suitable for alfalfa production, according to a recent review of soil surveys.

"This is considerably higher than previously thought by some," said **Dr. Vincent Haby**, soil scientist with the Texas Agricultural Experiment Station.

The news is important to East Texas producers because of the high-profit potential of growing alfalfa, he said.

"Alfalfa has the potential to pay for farmland in East Texas," Haby said. "On one ranch, net annual profit for alfalfa was estimated to be more than \$1,200 per acre for a four-year period."

Experts once thought alfalfa couldn't be grown profitably in East Texas because most soils in the area are strongly acidic. However, Haby and his soils research team proved alfalfa can be grown on many soils with proper soil remediation. Moreover, not only could it be grown, but it could be highly profitable when managed well.

Haby's research, which was partially funded by Sustainable Agriculture Research and Education grant, indicates alfalfa could be profitably grown on nearly 34 percent of the soils in Anderson, Gregg, Smith, Cherokee and Rusk counties. However, the percentage of soils suitable for alfalfa varied from county to county, Haby said.

Coastal plains soils must be well drained with good aeration to be suitable for alfalfa production.

"Poorly drained soils in East Texas will have gray-colored subsoils or mottles of gray color interspersed in the subsoil," Haby said.

Subsoil acidity is another limiting factor. This is because in strongly acidic soils, aluminum and sometimes manganese become more soluble and toxic to alfalfa, he said.

"As pH drops below 5.5 in strongly acid soils, aluminum increases can become toxic to alfalfa root growth," Haby said.

Soils with a subsoil pH of 5.5 or above will have low levels of aluminum and are suitable for alfalfa production—if all other factors are favorable, he said.

Using these parameters, Haby and **Allen Leonard**, research associate, reviewed soil survey data from the U.S. Department of Agriculture's Natural Resources Conservation Service. Soils are surveyed using many characteristics, including acidity, depth, color, particle size, binding of the particles, stickiness and plasticity.

Soil surveys are a means of characterizing and mapping an area's soils. The soils are often named after a geographical area, nearby township or landmark.

Soils with properties suitable for alfalfa production in the five-county region include: Bowie, Darco, Elrose, Fuquay, Gallime, Lilbert, Larue, Oakwood and Ruston.

Soils which may or may not be suitable, depending upon slope and other factors include: Boswell, Eustis, Pickton and Wolfpen.

Soils common to East Texas with properties NOT suitable for alfalfa production include: Arenosa, Bub, Bibb, Cuthbert, Gladewater, Hannahatchee, Iuka, Kirvin, Kullit,

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SOIL FOR ALFALFA

Lilbert soil, with a deep, loamy, fine sand top layer over sandy clay loam, is usually ideal for alfalfa production.



Kaufman, Lakeland, Latch, Nacogdoches, Nahatche, Mantachie, Magnolia, Redsprings, Sacul, Thenas, Trinity and Urbo.

"Some of the more sandy soils listed as 'unsuitable' may support alfalfa if a judicious liming program has been followed and the site is well drained," Haby said.

Anderson County soils considered suitable for alfalfa account for 32 percent of the area. These soils include Darco, Fuquay, Larue, Elrose, and Bowie, Haby said.

Gregg County soils considered suitable for alfalfa production include Bowie and Lilbert, which comprise 23 percent of the area.

"Both soils have supported excellent alfalfa growth in our previous research studies," Haby said.

Smith County soils considered suitable for alfalfa account for 36 percent of the county acreage.

More than 30 percent of Cherokee County soils are considered suitable for alfalfa production. Suitable soils include selected Lakeland, Bowie, Eustis and Ruston soils.

Nearly 46 percent of Rusk County soils are suitable for alfalfa production, the highest percentage of any of the five counties Haby evaluated.

"The alfalfa-suitable soil acreage is lower than this percentage because slopes greater than about 3 percent may not be suitable due to the possibility of erosion when a clean-tilled seedbed is prepared," Haby said.

However, no-till cropping methods exist which could make the establishment of alfalfa feasible on soils with greater slopes, he said.

"The main characteristics making soils unsuitable for alfalfa production in Rusk County include slope, wetness, frequent flooding, subsoil acidity and clay content," he said.

Haby cautions that success with alfalfa depends upon careful attention to site selection, proper liming, pest control and fertilization—including boron.

Establishment costs—from \$230 to \$350 per acre—can also be an inhibiting factor.

On the other hand, compared to hybrid bermudagrass, some production costs are reduced.

"One of the many benefits of alfalfa production is that nitrogen fertilizer is not needed. Rhizobium bacteria inoculated on the roots of alfalfa convert nitrogen in the air to the form needed for plant growth," Haby said.

Haby has detailed guidelines for site identification and establishment of alfalfa. The guidelines can be found on the Internet at <http://soils.tamu.edu>.

Alfalfa production budgets in the form of Excel spreadsheets may be downloaded at <http://ruralbusiness.tamu.edu/forage/>.

Haby noted that successful East Texas alfalfa production isn't limited to the counties surveyed.

"The guidelines used for these five counties could be used for soils in other counties," he said.

Farmers can learn what soils they have through their local soils survey, available through the Natural Resources Conservation Service. The information should also be available through the Texas Cooperative Extension office in their county.

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