

The Fame of Sharkey Clay

*Gumbo isn't always edible and buckshot
isn't always shootable.*

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"I especially want to see some Sharkey clay!"

An odd request? Yes, but one often made by first-time visitors to the Mississippi Delta, who are frequently as eager to look at this unusual soil as they are to view the Mississippi River. People in all parts of the country hear of Sharkey clay long before they get a chance to see it for themselves.

Everyone appears to have his own opinion of this peculiar soil. Soil technicians say that it has "unusual physical and chemical characteristics."

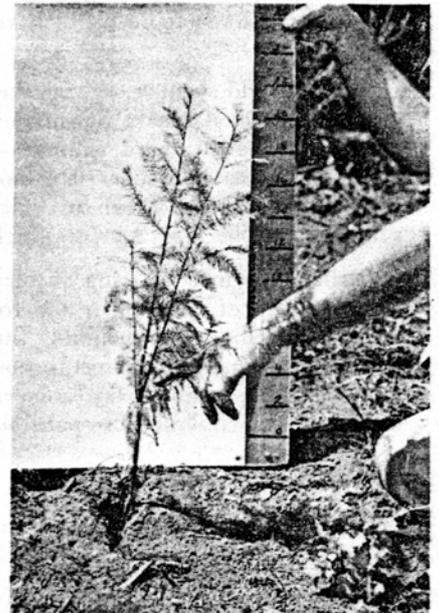
Local farmers scorn it as "buck-

shot—either too sticky or too hard for plowing."

Foresters associate it with commercial hardwood sites that they describe with controlled enthusiasm as "of fair productivity."

Soil maps show it occurring widely throughout the Mississippi River floodplain from southern Missouri to the Gulf of Mexico. Its name comes from the fact that it was first defined and described in Sharkey County, Mississippi. The official description by the U. S. Soil Conservation Service, though, is from a profile obtained about one mile south of Tunica, Louisiana, in West Feliciana Parish.

Sharkey soils are found in the slack-water areas of the floodplain where various thicknesses of fine-

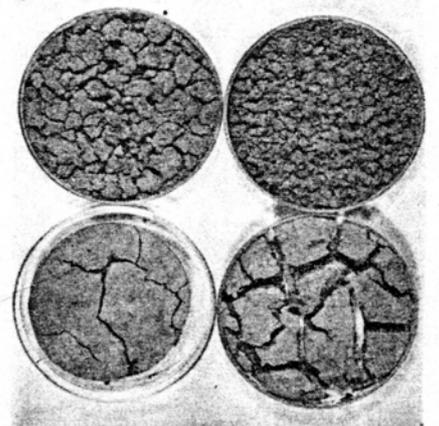


A cypress seedling planted in Sharkey soil. A few weeks of dry weather caused cracks to form in the soil, causing a survival hazard.



Almost the entire Delta Experimental Forest at Stoneville, Mississippi, is on Sharkey clay soil. Nuttall oak is one of the outstanding species on this soil, thriving on the flats.

The top trays show dry Sharkey topsoil with different-sized "buckshot." The lower ones show shrinking and cracking of the subsoil.



textured sediments have been deposited. These clay soils develop where drainage is slow—on level or very gently sloping land. For the most part they are slightly acid, with black to dark gray topsoils and gray to dark gray subsoils.

What's so unusual about this soil? First, it's sticky; so much so that it often is called "gumbo." Farmers learned that soil moisture had to be just right before they could plow Sharkey clay. Often, the slack-water soils, among which Sharkey is the most prominent, proved so hard to work that they were converted to pasture or allowed to revert to hardwood forests.

Another odd feature of Sharkey clay is the way it breaks down when drying into small, hard granules—hence the name buckshot. On bare ground the surface layer of small granules may be 2 or 3 inches thick.

Perhaps the most striking physical characteristic of Sharkey is the tremendous swelling and shrinking that accompanies changes in moisture content. An expanding clay mineral called montmorillonite is responsible.

Sharkey can soak up water and expand until soil moisture occupies over 50 per cent of the ground volume. In dry weather, the soil shrinks with loss of moisture until exceptionally wide and deep cracks develop. The swelling and shrinking are so marked that a 2- or 3-inch difference in ground level can be observed when Sharkey is wet and when it's dry. However, because the clay holds water so strongly in the drier condition, water content never drops below about 18 inches in the top 5 feet of soil. This water that is left in the soil, unfortunately, is not available to plants.

The volume of the cracks is so great that Sharkey, under forest cover where the cracking is greatest, has been found capable of absorbing approximately 4 inches of rain in 24 hours. In woodlands, cracks extend as far down as the tree roots, but in open areas they usually go only about 2 or 3 feet deep. The difference arises from the fact that, in the open, moisture is lost only by evaporation from the soil surface, while in the forest tree roots may deplete the moisture to depths of 5 feet or more.

Sharkey soils are only fairly productive forest sites. The trouble lies in their physical properties, such as exceptionally high clay content and slow drainage which reduces aeration. Species like Nuttall oak, overcup oak, green ash, persimmon, hackberry, American elm, and bitter pecan do well on the flats and shallow depressions; sweetgum, willow oak, and water oak are the best species commonly occurring on the Sharkey ridges. Available water capacity is fair to good. When Sharkey is saturated, it has approximately 16 inches of available water within a 5-foot depth (in addition to the 18 inches unavailable). In general, these soils are recognized as fertile—it's the difficulty of management that restricts their use for row crops.

Sharkey clay is now important to the Southern forest industry because it supports so much of the hardwood resource—more than any other soil within the Mississippi Delta—and its extent will continue to make it important to Delta forestry.

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