




## This versatile fiber crop can replace tobacco in eastern North Carolina fields

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 If you drive through certain parts of eastern North Carolina this summer and fall, you're likely to see an unfamiliar sight growing on roadside farms—a dense, towering crop that may reach 12 feet before the first frost. Greater than its stature in the field is the amazing market potential and versatility of this new North Carolina crop. It's called kenaf (pronounced kuh-NAFF), a fiber crop that may one day outpace tobacco and cotton in North Carolina's agricultural economy.

A group of farmers concentrated in Greene, Pitt and a few neighboring counties is growing kenaf, *Hibiscus cannabinus* L,

### Eastern North Carolina growers hope to become the world's largest single source of



which is closely related to okra, cotton and hollyhocks. Kenaf is cultivated worldwide as a fiber crop, with the vast majority grown in China as a substitute for jute. Those who've heard of the plant might recognize it as an alternative source of pulp for paper, much like hemp. But kenaf's uses are surprisingly broad. The stem's soft, inner fiber is incredibly absorbent and lightweight and has diverse applications in lumber, automotive parts, animal litter and bedding, and wastewater treatment, to name a few.

"They say kenaf is the crop with a thousand uses but no market," says North Carolina State University Extension agronomist David Jordan.

But the farmers in North Carolina are well on their way to changing that. These kenaf growers and their business partners are employing a ground-up farming approach: They are growing the crop, processing it and developing markets for their product. At the heart of this enterprise is Greene Natural Fibers with a 40,000-square-foot processing facility served by Pitt and Greene EMC. It's in central Greene County just north of Snow Hill and employs 30 people full-time. Greene Natural Fibers represents a major financial commitment by a group of farmers and investors.

Right now, GNF is supplying two primary markets: the animal bedding and automotive industries.

The kenaf plant has two distinct types of fiber. The outer layer or bark is called "bast," and

it is long and stringy like jute or hemp; the interior or "core" is light and spongy like balsa wood. North Carolina's processed bast fiber is now supplying auto manufacturers, including Ford, Chrysler, General Motors, BMW and John Deere, for use in interior panels (doors and dashboards) and headliners. The core fiber is being marketed as premium animal bedding to horse owners all along the Atlantic seaboard.

"We are not a niche crop, and kenaf is not a fad," says Paul Skillicorn, one of GNF's founders and its product development and research point man. "The things that kenaf can do are very mainline."

"It's the only major new crop to be

introduced in North Carolina in the last few decades," he says. "I think it will be more successful than cotton in the long run."

Kenaf and North Carolina appear to be a match made in heaven. A tropical plant native to Africa, kenaf flourishes in regions with high humidity, loamy soils, abundant rainfall and a long growing season. Kenaf also may have found an ideal cultural and economic climate in which to grow. The kenaf industry in North Carolina is emerging at a time when tobacco farmers are struggling to hold on to their livelihoods in the face of slashed subsidies, price supports and allotments.

"Kenaf is making it—absent any kind of subsidies," says Skillicorn. "That's an incredible home run in agriculture today."

Another significant advantage of growing kenaf in eastern North Carolina is the skill and expertise of tobacco farmers who may choose to diversify, he says. They are reputed for their ability to follow the stringent protocols that are required to produce a superior crop. Kenaf must be "retted" in the field, a necessarily precise drying period in which the inner fiber begins to loosen from the outer bark. Once in the processing facility, the bast is mechanically separated from the core.

"Our processing plant is very analogous to a cotton gin," says Andy Moye, a kenaf grower and GNF's agricultural

production manager. The separated fibers are then baled and formed into pellets for second-tier manufacturers who will further refine the product for their specific use.

It's hard to imagine that what looks like a pile of fluff could be so sophisticated in its usefulness. For instance, when the core is ground to a fine powder, the material can bind to and filter contaminants from wastewater. Skillicorn calls this substance the "poor man's activated carbon." The product is foremost in new technology-related markets GNF is seeking. Meanwhile, GNF has partnered with the nearby town of Farmville to apply this sludge-activation method in a demonstration project. Core fibers could be similarly used as a biological agent in cleaning up oil spills and other environmental pollutants.

Skillicorn says GNF doesn't plan to expand into the pulping of fibers for paper production. Such an enterprise is costly and risky, as it is difficult for kenaf to compete reliably with tree pulp on a large scale. However, he can envision supplying "boutique markets" once the company has tens of thousands of acres of crop supplying its primary target markets. For now the farmed acreage in North Carolina is relatively small. In the 2002-2003 season, kenaf was grown on 4,500 acres in Greene, Pitt and Wilson counties.

The company will continue to select and pursue high-value applications for its fibers. The fibers can be used as fillers and extenders in composite lumber or particle board; reinforced plastics and other synthetic products; potting soil; and even pharmaceuticals and cosmetics.

Kenaf also has an environmentally friendly appeal. It is a natural, organic and renewable resource. It provides high yield without significant irrigation. And it can be recycled.

"Automotive panels made with kenaf are recyclable and also much safer than some of the plastics," says Moye. "On impact, it crushes like an egg carton as opposed to breaking into shards of plastic."

In the automotive industry, kenaf could grow into an unparalleled product.

"Detroit is always looking for ways to make things

lighter and cheaper," says Moye.

"Almost all of the major automobile companies are focusing on natural fibers. You've already got coconut fibers in the seats of BMWs."

At least for now, kenaf does have a few limitations. Because of its bulk, the raw product is expensive to ship. To earn a profit, the grower ideally needs to be within 30 to 40 miles of a processing facility. Also, a significant pest in kenaf crops is the nematode, a parasitic worm. Because crop rotation is an important method of controlling infestations, intensive cultivation in a single region could present challenges, says agronomist Jordan. Developing acceptable pesticides and creating nematode-resistant varieties are important research goals.

Kenaf ventures have failed in Texas, Mississippi and California, but Skillicorn says North Carolina farmers and entrepreneurs have learned from those experiences. He and Moye also acknowledge the insight gained from a grant given by the Golden Leaf Foundation in 2000 to the nonprofit Carolina Kenaf Farmers Foundation, of which Skillicorn was president. The grant allowed several North Carolina farmers to test the waters with minimal financial risk. Fundamentally, that project demonstrated that kenaf is a viable crop in the region. The foundation also received a \$300,000 start-up grant from the General Assembly administered through the North Carolina Rural Economic Development Center.

Skillicorn says he is confident that kenaf is an indelible feature on North Carolina's agricultural and economic map. The company's harvest goal is to eventually reap an average of 5 tons of dry fiber per acre per year. Its ultimate goal is to become the world's largest single-source supplier of processed kenaf.

"We are headed through a difficult time, as with any new business, in which we have to create and sustain the markets that we've addressed and also develop some new markets," he says. "We will succeed in spades in that endeavor."

*Raleigh-based writer Carla Burgess has contributed many articles to Carolina Country, including stories about Hyde County onions, Yadkin County popcorn, and dental care for rural communities.*



TOP: Close-up of a kenaf plant, a fiber crop that may be more successful than cotton, according to Paul Skillicorn of Greene Natural Fibers.

MIDDLE: A field of kenaf, which is closely related to okra, cotton and hollyhocks.

BOTTOM: Kenaf grows in the foreground of this North Carolina farm, while tobacco grows behind it.

## Kenaf Facts

☞ Kenaf is not related to hemp or marijuana, but there is a striking similarity in the leaf shape of some varieties.

☞ Kenaf may yield 6 to 10 tons of dry fiber per acre per year. This is three to five times greater than the yield for Southern pine trees, which require seven to 40 years before they're ready for harvest.

☞ The outer fiber or bast makes up 40 percent of the stalk's dry weight; the inner fiber or core makes up the other 60 percent.

☞ In the right climate, kenaf grows 14 feet tall in four to five months.

☞ Kenaf flowers at the end of the growing season, producing showy hibiscus-like blossoms.

☞ Kenaf has been cultivated for at least 4,000 years, with its roots in Egypt.

☞ Kenaf reportedly has more than 129 different names world wide, like "deccan hemp" in Bombay and "java jute" in Indonesia.