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EXCLUSIVE BUSINESS

The Paper in Your Paper Towel Is a Candidate for a Radical Overhaul

Kimberly-Clark says it is developing a fiber with the promise to revolutionize paper-based products

By Natasha Khan

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Scott paper towels are among the products made by Kimberly-Clark. SCOTT OLSON/GETTY IMAGES

For two decades, Kimberly-Clark **KMB 0.35%** ▲ has scoured the Earth for a material that could replace wood fiber. The maker of Scott paper towels, Cottonelle toilet paper and Huggies diapers now says it has made a breakthrough.

Paper-based products of the future, the company says, could be made with hesperaloe, a plant with long, pointy leaves that grows in arid climates.

Fiber from the plant can be used to make paper towels, toilet paper and other products that are both stronger and softer than wood-based equivalents, executives from Kimberly-Clark said. If production reaches

scale, it could also be cheaper and less environmentally damaging than cutting down trees, they say.

“We call it our Goldilocks discovery,” said Craig Slavtcheff, the company’s top research-and-development officer. The company plans to announce its findings later Monday.

Kimberly-Clark describes its continuing efforts to commercialize the findings as a “moonshot,” and executives caution that there is a long research runway ahead. Still, they expressed hope that hesperaloe could help them reach a previously stated ambition to eventually stop using fibers from natural forests in their products. The company is one of the biggest makers of paper-based products in the world.



Kimberly-Clark researcher Mark Mleziva, with a hesperaloe plant at a company facility in Neenah, Wis.
KIMBERLY-CLARK

Kimberly-Clark says it is the first to do substantial research on hesperaloe. It already holds more than 30 patents related to its findings.

A viable alternative to wood fiber would be a scientific breakthrough that could reshape the consumer-products landscape. And if hesperaloe delivers on the promise that Kimberly-Clark researchers say it might have, it would be a blow to the companies that earn billions each year harvesting the trees used to make the wood fiber in the world’s paper products. A significant

portion of it comes from boreal forests in Canada and across Scandinavia. The U.S. is also a big supplier.

An alternative to wood fiber would also be an environmental breakthrough. Reduced demand for wood would leave more trees able to suck up carbon emissions.

Currently, bamboo and recycled paper are the primary alternatives to traditional wood fiber in paper-based products. Many American shoppers find them to be less plush or too rough for products such as paper towels and toilet paper.

Kimberly-Clark has so far invested about \$250 million in research on hesperaloe and to develop the technology that will allow it to be used in future products. The company says it will take multiples of that sum to commercialize the discovery.

The company is accelerating its research. It is building a pilot facility in Yuma, Ariz., and is collaborating with farmers and technical experts in Arizona, California and elsewhere to further evaluate hesperaloe's viability as a commercial crop. Compared with some other crops grown in the U.S. Southwest, hesperaloe requires less water to cultivate, another potential benefit in a region where water can be scarce.



A Kimberly-Clark site in Yuma, Ariz., will assess whether hesperaloe is a viable commercial crop.

KIMBERLY-CLARK

The findings about hesperaloe stem from work Kimberly-Clark began 20 years ago, when it assembled what it called a “tiger team” to start thinking about the future of fiber, said Mark Mleziva, a senior research manager at Kimberly-Clark and one of the first members of the team.

As it started its work, the team compiled a list of 70 candidates for potential new sources of fiber. They examined agricultural residues such as wheat straw and leftover corn. Even chicken feathers, seaweed and algae were on the list. “We tried to pulp everything from wood straw to bamboo,” said Jeff Melucci, the company’s top executive for strategy. “Everything.”

When the researchers began examining potential alternatives to wood fiber, cost and scale were crucial considerations. Slavtcheff said those factors were roadblocks for other materials they considered. The researchers don’t yet know exactly what it will cost to cultivate, harvest, transport and process hesperaloe into pulp at scale, but say early signs are that the cost could compare favorably with wood.

One of the first clues of hesperaloe’s suitability came when the team saw the plants growing at an abandoned Arizona state test-crop facility. It was on desert land, unattended to for years, Melucci remembers. Yet it was thriving, a sign that it could be a durable crop.

When the Kimberly-Clark team studied it, the length of its fibers and their slender diameter stood out. The combination suggested the plant could offer both softness and strength when used in hygiene products. Further research confirmed those suspicions: The researchers had found a rapidly renewable natural-fiber source.

“We’ve generated enough data thus far to feel encouraged, confident and excited about the potential that this is going to have for our portfolio,” said Slavtcheff.

The Yuma facility is slated to open next year.

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Natasha Khan is a business reporter at The Wall Street Journal, covering American consumer giants, the forces driving the global consumer economy and trends reshaping the industry's best-known brands. Prior to joining the Journal's corporate bureau in New York, Natasha spent more than a decad...

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