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Gulf oil spill: Tech teacher has a solution

Professor says to use cotton

By Alyssa Dizon
Morris News Service

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With the country scrambling to find ways to clean up the oil spill in the Gulf of Mexico, a Texas Tech professor said the South Plains may just have the answer.

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Cotton boom advantages

1 gram of cotton can absorb 40 grams of oil

Remains strong when wet

Environmentally sustainable

Cost-effective

Alternative market for discounted cottonAlso

Rather than spend money and effort on containment structures and synthetic materials, Seshadri Ramkumar, associate professor of the Texas Tech Institute of Environmental and Human Health, recommends ... cotton.

Ramkumar, who creates rolls of nonwoven cotton at his Nonwovens & Advanced Materials Laboratory in Reese Center, said the idea came to him a few weeks ago, and he was surprised cotton had not been considered earlier.

"We are the only ones - actually, I think,

to my knowledge - focused on taking cotton to oil absorption using nonwoven technology," he said.

On April 20, an explosion at Deepwater Horizon rig leased by London-based oil company, BP, caused the massive spill. Experts say the rig, located 50 miles off the Louisiana coast, has been leaking oil at a rate of 200,000 gallons per day. Since then, scientists and BP have been trying various methods to contain or soak up as much oil as possible.

Ramkumar called his discovery "a blessing in an ironic situation." The chemistry of cotton makes it the ideal material for oil absorption with its waxiness, strength when wet, absorption capacity and ability to biodegrade.

Cotton fiber contain 0.5 percent wax, which enables it to soak up 40 times its weight, Ramkumar said. Add chemicals and it could absorb up to 70 times its weight, he said. According to the National Oceanic Atmospheric Administration, several million feet of booms, lightweight tubes used to recover oil, have already been tossed into the ocean. Those synthetic booms containment or sorbent booms, Ramkumar said, soak up only a third of what cotton absorbs and are not biodegradable.

"You take those plastics and where do you put them? In landfills," he said. "They will stay put forever."

In addition, a little cotton can be stretched a long way and be produced domestically. Unlike apparel production, there is no need to go through the expensive processes of dyeing, bleaching and weaving the cotton.

Ramkumar and his small group of graduate students have been researching ways



Zach Long / Lubbock Avalanche-Journal
Tech's Dr. Seshadri Ramkumar says he has a

to turn discounted, low micronaire cotton into valuable, high-tech products. Micronaire measures the cotton's quality; discounted cotton has micronaire of less than 3.5. The lower the quality, the more discounted the cotton price becomes, so Ramkumar wanted to find alternative markets to use that harder-to-sell cotton. "You don't have to reinvent the wheel - all we are doing is we are developing a product which is logistically better and convenient using cotton," he said.

One value-added discounted cotton product he invented last year was Fibertect, a commercially-sold nonwoven decontamination wipe that absorbs toxic chemical substances. As oil continues to contaminate the gulf, Ronald Kendall, founding director of the Texas Tech institute, said it could only be a matter of time before it reaches the Texas coast.

Kendall and a team of scientists have been taking frequent trips to the coast to monitor the water and marine life, and he said the nonwoven cotton technologies could be very useful. "Any wildlife rehabilitation that will occur we believe could be assisted with the Fibertect invention as well as other nonwoven applications from his lab," he said. "There are just so many applications of Dr. Ramkumar's technology to take cotton and turn into products that we never even thought of before."

Shawn Wade, director of communications for Plains Cotton Growers, said new opportunities for cotton are always good news for producers, especially if it will help them sell low-quality cotton.

"It puts the discounted cotton in a different ball game," said Appachi Arunachalam, a graduate student in Ramkumar's lab. "You go from a push market to a pull market."

About 35 percent of the region's crop has a low micronaire, Ramkumar said.

Overall, producers lost about \$25 million from the 2009 crop and \$29 million from the 2008 crop.

However, with the majority of the region's 2009 crop sold, there will most likely not be enough cotton to produce booms at this time, said Jay Yates, an agriculture economist with the Texas Agri-Life Extension. There may be some cotton still in merchants' storehouses, but to produce nonwoven booms in bulk, one would need to wait for the 2010 crop.

Whether cotton booms are used for oil spills or future spills, Ramkumar was confident in the profitability of nonwoven cotton. If he had to, he would even use his year-old lab to mass-produce it himself.

solution to cleaning up the Gulf oil spill .



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