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# The future of cotton

By Tannith Cattermole  
15:55 November 26, 2010

4 Pictures



A boll of cotton matures in the field (Texas AgriLife Research photo by Kathleen Phillips)

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Cotton has held an important significance for mankind for thousands of years. The earliest traces of cotton were found in caves in Mexico that proved to be over 7,000

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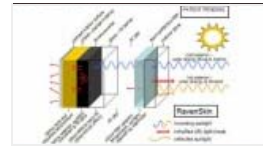
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years old, and 3,000 years ago Egyptians were growing, spinning and weaving cotton cloth. Cotton was brought to Europe in 800AD, and by 1500 it was known around the world, yet it was the Industrial Revolution that paved the way for the fast-growing textile industry and today it is the world's most important fiber.

Not only are all parts of the cotton plant economically useful, but the multitude of uses it can be put to make it America's number one value-added crop. The fiber is used for cotton cloth, while the short fuzzy linters provide cellulose for making plastics, explosives, paper products and padding for furniture. The cottonseed is crushed to produce oil for shortening, cooking or salad dressing, and the meal and hulls become animal feed and fertilizer. The stalks and leaves are re-ploughed to enrich the soil.

Over the years we have crushed, extruded and woven cotton into many forms, but even today scientists and entrepreneurs are transforming the ways we use cotton. [Cotton Incorporated](#), the research and marketing company representing upland cotton in the U.S., is championing seven new cotton-using companies for their sustainability. "At Cotton Incorporated, we define sustainability as practices that create an environmental, economic and societal benefit," explains Dr. Kater Hake, Vice President of Agricultural and Environmental Research at Cotton Incorporated. "The developments of these organizations certainly address those three tiers of sustainability, and demonstrate the seemingly infinite uses for the cotton plant."

## Recycled cotton

[Bonded Logic](#) have come up with an innovative new way of recycling your old denim jeans – it's using them to create durable housing insulation. The company's UltraTouch Denim Insulation gained fame through a drive called [Cotton. From Blue to Green](#) in 2006, which awarded communities in need through the creation and development of community-based green buildings.

With Americans buying [450 million pairs of jeans annually](#), weighing in at roughly 2.1 lbs (1 kg) per pair, they are a great source of high-quality material. UltraTouch has all the advantages of jeans themselves, making insulation that is warm, soft, durable and easy to work with. Cotton is often criticized for its water-intense production, but with jeans living a second life as insulation, and Levis introducing their WaterLess line in January 2011, jeans could continue to be a stylish yet greener lifestyle choice.



[Mulch & Seed Innovation](#) in Centre, Alabama, is turning the by-product from cotton ginning into high-quality mulch. While most other mulch is made from virgin trees, this mulch is made using cotton gin "trash." The result is reduced waste going to landfills, and mulch production turning into a green industry itself. The all-natural mulch promotes vegetation, reduces soil erosion on landscaping projects, and grows healthy grass on lawns across the U.S.

## Cotton as food

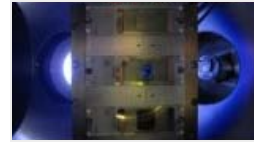
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At [Texas A & M University](#), Professor Keerti Rathore and a team of scientists have been working on a new variety of cotton that could help alleviate hunger around the world. Currently protein-rich cottonseed cannot be digested by humans or animals other than cows, due to the presence of a toxin known as gossypol, which is a naturally-occurring pest-control chemical. The research aims to retain the gossypol, but reduce it in the seed to a level fit for human consumption. “There is enough cottonseed produced every year to meet the basic protein requirements of 500 million people,” says Rathore, who hopes that the new variety could be used in a few years to feed humans directly, or indirectly as feed for chickens and pigs. For every pound of cotton fiber a plant produces, 1.5 pounds of protein-rich seed could be used for food, which could have significant implications for world hunger.

## Cotton as damage control

Highly relevant given the recent Gulf of Mexico disaster, [Sellars Absorbent Materials](#) has developed a new cotton boom that can be used to soak up oil spills. “We wanted to create a sorbent that not only performed better, but that was better for the environment in production as well as purpose,” says John Sellars, EVP-Marketing. He cites [progress made environmentally](#) in reducing water consumption and reliance on pesticides in the production of cotton, but went one stage further with the design of a new machine capable of transforming a cotton by-product, linters, into a sorbent-friendly material.

“Using cotton staple can be expensive and generally entails a scouring and bleaching process,” acknowledges Mr. Sellars. “We wanted to get around that by using cotton linters.” The new technology creates a sorbent that is up to 50 percent more effective than polypropylene alternatives, using a renewable cotton resource. It is both hydrophobic and oleophilic, which means it can soak up oil while floating on the surface of water, making it uniquely suited to neutralizing the damage of oil spills and spills of oil-based chemicals on water. In fact, it was put to the test in the recent [Gulf of Mexico disaster](#) where it was said to have performed to everybody's expectations.



Sellars is by no means the [only organization](#) looking at new ways of using cotton to clean up oil. At the [Institute of Environmental and Human Health at Texas Tech University](#), Dr. Seshadri Ramkumar and his team have created a patented wipe called Fibertect. Raw cotton fiber is cleaned, processed and turned into a thin, smooth fabric. When carbon is sandwiched between two layers of this non-woven fabric it can be used as a decontamination wipe – the cotton absorbs oil or liquid, and the carbon neutralizes the toxin within.

So far it has been awarded a patent and is already used by the Pentagon and approved for the US military as a low-cost wipe to absorb and neutralize gases and liquids that might be used in chemical warfare. Ramkumar suggests it could be used via booms to [clean up oil spills as well](#).

## Cotton as a conductor

At the [Textiles Nanotechnology Center at Cornell University](#), Professor Juan



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Hinestroza and a team of researchers have given cotton threads special properties using nanotechnology. The cotton fibers are covered with microscopic particles enabling them to conduct electricity. The applications of this are endless, but they have already used them to sense the heart rate of a person wearing the fabric, and created [clothes that can power electronic devices](#). They can even create color without dyes, enabling them to change the color of garments at the flick of a switch!



Other cotton innovations Gizmag has already covered include the [EcoCradle](#) – naturally-grown styrofoam made from cotton by-product and mushrooms; [biodegradable cotton cigarette filters](#); and renewable [solar panel back-sheets](#) made from recycled cotton rags.

For thousands of years cotton has been a source of textile fiber, but these innovative organizations and others like them are evolving the use of cotton and its future in our society.

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