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NEWS & NOTES

EFS COTTON MANAGEMENT SYSTEM

Fiber Competition

COTTON INCORPORATED

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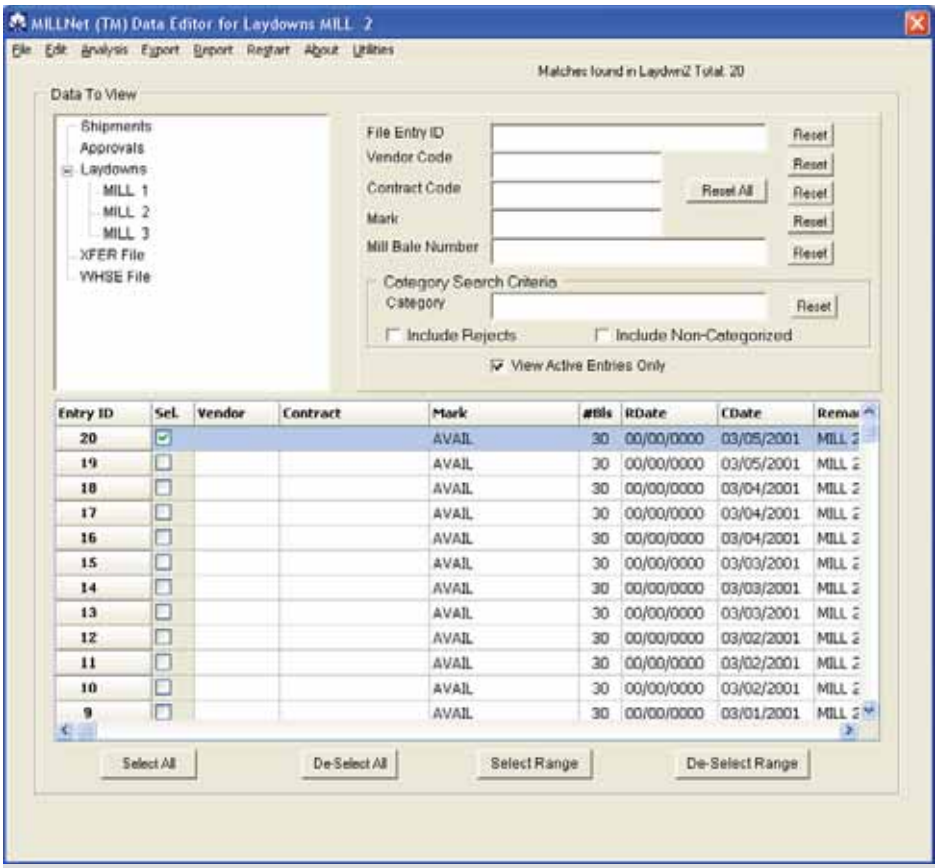
Conference Featured Sustainability and Innovation

With the theme "Sustaining Cotton's Competitiveness," the 21st Annual EFS® System Conference held June 10-11 at the historic Peabody Hotel in Memphis, Tenn., attracted 218 attendees from 26 mills, 28 merchants and co-ops, and eight manufacturers from 19 countries. The annual meeting convenes every third year in Memphis in conjunction with the USDA Triennial Universal Cotton Standards Conference.

Mike Watson, Vice President of Fiber Competition at Cotton Incorporated, said that this year's conference "took place in a business climate where there are extremely thin margins, escalating energy and transportation costs, and increasing environmental/sustainability pressure."

Watson said that when topped off with volatile cotton prices, "these factors affect every portion of the cotton supply chain, including production, manufacturing, and retail. Nobody gets out alive."



Mills that have upgraded to MILLNet™ 4.0 are finding the new product to be effective and user-friendly. See the story on page 2.

The purpose of the annual conference is to help the industry deal with these concerns by showcasing innovations throughout the supply chain, such as precision farming technology, new cotton harvesting systems, lower energy dyeing and finishing, and implementations of product development.

Presentations during the conference included Economic Environment, Product Technology to Stay Competitive, Cotton and the EFS System Around the World, Cotton Fellows Address, Cotton Sustainability Through Standards and Logistics, Trends in Cotton Production and Ginning. USDA Classing Update, Cotton Sustainability, Improving Cotton Flow with the EFS System, and Quality Measurements for the Future. Conference proceedings are available in DVD format. Contact Cotton Incorporated to obtain copies.

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MILLNet™ 4.0 Enhances EFS® Toolkit

One of Cotton Incorporated's latest technological advances is its upgrade of the MILLNet software to run in Microsoft® Windows®. At the 2008 EFS System Conference, Louis Pannell, Quality Manager at Buhler Quality Yarns Corporation, shared his experience as the first user of the newly released MILLNet 4.0 software.

Before giving his tour of the new look and features available in the Windows program, Pannell called the MILLNet DOS version an "old friend, very reliable, very consistent. Some people could probably operate it blindfolded." He said that while the new version will look quite different to new users, "it's just like any other software. You've got to work with it and get to know it. Then, you'll be very pleased with it."

In a brief overview of MILLNet 4.0., Pannell highlighted the Shipments and Laydowns views available on the main window. "Just like there are physical locations for a bale, MILLNet replicates the location with an electronic status in the program," he said. Using a slide presentation, Pannell showed how easy it is to use MILLNet 4.0 to search for bale shipments, sort the shipment records, and locate the shipment record to be edited.

Pannell emphasized that the same useful features in the DOS version are also available in version 4.0. For example, users can still edit records individually or several at one time. Now, however, the command to perform both functions is conveniently located in the Edit menu on the Data Editor window. While the information in the edit mode for shipment data is arranged similarly, the commands are arranged on a toolbar with graphic icons. In this view, the user can edit header information. From the Data Editor window, users can also view and edit warehouse information and laydowns by mill.

MILLNet 4.0 contains all of the functions available in the DOS version. Some are organized in the Utilities menu.

Many of the functions on the main screen in the DOS version have been organized under the Utilities menu in MILLNet 4.0. Pannell showed how much easier it is to print bale tags for a shipment in the new version since the Entry IDs display in the window from which the tags are printed.

Other benefits with the new version include the ability to save graphs and reports as .pdf files, export data to Microsoft Excel, manage costs and inventory for other fibers, and log in to the program remotely. Pannell cited practical reasons for upgrading to the new version, such as MILLNet 4.0 running in Windows and being user-friendly with a short learning curve. "If you're an operator running the DOS program, you will quickly adapt to this new program," he said. "If you bring in new personnel, they will catch on a lot quicker; it's a lot more intuitive."

Also, there is no cost to the current DOS version users for the upgrade to MILLNet 4.0. Pannell said there is no need to upgrade hardware; he was able to continue using the same scanner and bale printer. He added that the installation only takes a few hours, and that he was running the new program on his own by the third day.

Pannell said that he fully recommends MILLNet 4.0 software for both existing DOS version users and for any mill looking for a cotton management tool. For those still deciding whether to upgrade to the new version, he said, "Come on in; the water is fine." §

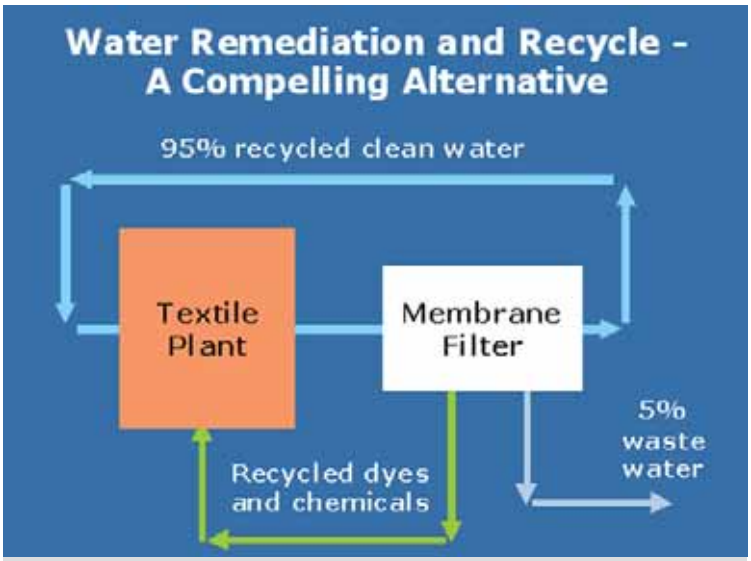
Merchant software in development

Cotton Incorporated is currently developing software to provide merchants in the industry with a system to administer the flow and control of raw cotton. Look for updates on this innovative software tool in upcoming editions of *News & Notes*.

Research Consultant Traces Cotton "Footprint"

Dr. Samuel C. Winchester, Professor Emeritus, College of Textiles at North Carolina State University, addressed sustainability in the cotton industry with his presentation *Reducing Cotton's Environmental Footprint in Textile Processing: How Much, Where, and at What Cost...and Why Should I Care?*

The former DuPont research engineer said that regardless of an individual's view of global climate change, everyone should be concerned that the world population is expected to increase from the current six billion to 10 billion by 2050, and should be taking action toward conservation of water supply and quality and energy resources such as oil. While cotton textile production leaves a measurable footprint on the global environment, Dr. Winchester presented data to show how it can be reduced. According to his figures, the annual worldwide production of 56 million pounds of cotton consumes one trillion gallons of water and requires the application of 20 billion pounds of chemicals.



To reduce the environmental impact of cotton textile production, Dr. Winchester advocates water remediation and recycling during the dyeing and finishing process, as illustrated in this model.

Although the numbers might at first sound extreme, proper perspective provides correct perception. Dr. Winchester noted that while one trillion gallons of water is equal to the volume of Lake Michigan, the eighth largest body of fresh water in the world, the amount is less than one percent of all fresh water consumed annually.

While 11 percent of annual global cotton production takes place in North and South America, and 13 percent in Europe, Africa, and the Middle East, 36 percent occurs in an area including India, Pakistan, Australia, Japan, and South Korea, and a full 40 percent in China. With 76 percent of the world's cotton being produced in China and the Asia-Pacific region, Dr. Winchester said that in order to reduce the textile processing footprint of cotton, the focus should be on the East. "If we spent all of our efforts on North America, we could have a big impact in North America, but not across the globe," he said. The key technologies to reduce water, energy and chemical consumption in textile processing are improved water and energy management, continuous and combined processing, low-liquor-ratio batch processing, pad batch and foam processing, membrane technology, and alternative energy sources.

Dr. Winchester said that while the textile processing footprint covers yarn spinning, fabric formation, fabric coloration, and garment formation, it is most visible in the dyeing and finishing segment. Of the one trillion gallons of water consumed for annual cotton production, this is where 85 percent is used. This is also the point in the textile production process where 65 percent of the 20 billion pounds of chemicals are applied. "If you want to make a huge impact in reducing the textile processing footprint, it has to be focused on dyeing and finishing," he said.

Because older dyeing and finishing technology is often still used in the Far East, there is a wide range in the amounts of water being consumed globally. Batch dyeing uses a high-liquor ratio and, therefore, requires much more water throughout the process. With the older method, 21 times more water is consumed during bleaching and 10 times more is used in finishing than with modern, continuous/low-liquor techniques.

Dr. Winchester identified several approaches for reducing water consumption during dyeing and finishing that are high-impact with high technical certainty and broad utility, including full continuous dyeing, combined processing steps, low-liquor ratio, cold

*See **Winchester** on Page 8*


EFS System Conference
EFS System Conference
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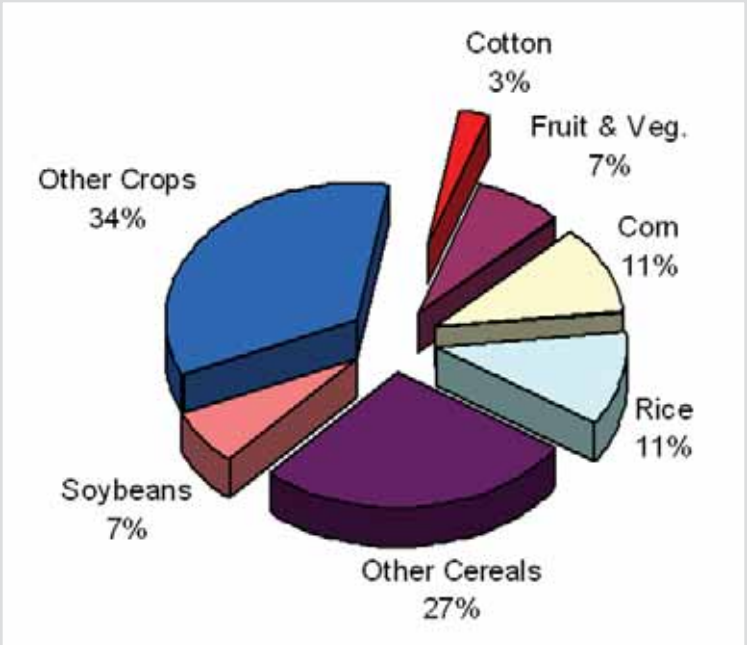
Conference *from Page 1*

Sustainability

In his presentation, *Moving Beyond the Outrageous Claims*, Dr. Ed Barnes, Director of Agricultural Research at Cotton Incorporated, noted that the critics applying the increasing environmental pressure to cotton often do not have data to support their assertions. He emphasized that the cotton industry today is making more cotton while using fewer natural resources.

USDA data show that since 1990, cotton yield has increased from nearly 650 pounds per acre to 850 while soil loss has decreased from over four tons per acre to approximately 2.5 due to new tillage practices and reduced tillage. During the same period, improved technology has reduced irrigation from 1.9 feet of water per acre to 1.4. Land use also decreased from 12 million acres to 9.5 million in the U.S. Global land use for cotton production constitutes approximately three percent of arable land worldwide.



Though cotton's critics claim that the crop uses 25 percent of the world's pesticides while using only three percent of all the land, the truth is that cotton uses eight percent of all pesticides on only three percent of all the world's arable land (not total land acreage).

In addition to the reduction in use of natural resources, there are other positive trends. Insecticide applications have been decreased by 50 percent over the last 10 years with the adoption of biotechnology and the success of the boll weevil eradication program. Also, energy consumption was reduced from 9,000 BTUs per acre to approximately 5,000.

Cotton Incorporated is currently conducting studies on sustainability in manufacturing with outside firms and validating new bleaching technologies that will reduce the environmental footprint of cotton processing. The new procedures, which improve the sequence of the bleaching operation, can also result in a cost savings for the dyer and finisher. Mary Ankeny, Director of Dyeing Research at Cotton Incorporated, presented case studies that demonstrate progress toward sustainability in cotton finishing in the areas of bleaching, ozone and foam application, and digital printing.

In rapid exhaust bleaching, the chemicals used in the bleaching process are consumed during the bleach cycle, leaving less chemistry to rinse from the fabric. After bleaching, enzymes are used to destroy any residual peroxide, and the fabric is neutral and ready for the dye cycle. The typical process time for rapid exhaust bleaching is 70-75 minutes compared to 95-100 minutes for conventional bleaching. In addition to the shorter cycle time, the benefits of rapid exhaust bleaching include a 40 percent reduction in water usage, a 35 percent reduction in energy usage, and a 10 percent increase in productivity.

A similar technology, novel continuous 2-stage bleaching, was developed for a continuous application. Conventional 3-stage bleaching includes desizing, scouring, and bleaching. The new method combines desizing and scouring into one step, reducing the number of washes after both the desize and bleach. Novel continuous 2-stage bleaching reduces water and energy usage by 60 percent and results in higher productivity.

In the garment washing process, ozone is being used in order to reduce the amount of chemicals used for a washed down appearance in denim. Most effective at room temperature, ozone can also be used to decolorize waste water before being discharged. The use of ozone results in a reduced process time, a consistent oxidation process, 30-70 percent less water usage, 25-90 percent fewer chemicals, and reduced energy costs.

In conventional processing, fabric in the dye trough picks up 60-100 percent of its own weight in water and chemicals. In contrast, with a foam application, which uses more air than water to carry chemicals to the fabric at very low wet pick-ups (wpu), there is less than 30 percent wpu and, in some cases, less than 10 percent wpu. Flexible systems can apply chemicals to one or both sides of the fabric. Benefits of foam application include reduction of water consumption by up to 80

percent, reduction of energy usage and chemical costs, and an increase in range speed and productivity.

In conventional printing, there is not only excess print paste left in the screens at the end of the process, but there are water and energy concerns to make the print fast, and a significant amount of hydrolyzed dye is washed away. Digital printing is a new low-consumption alternative in which the colors are mixed in the printer with very little dye, which results in little waste. Benefits of this new technology are the elimination of nickel screens and screen emulsion, no unused dye in the screen or in bulk to be disposed of after printing, low labor requirements, and the flexibility of mass customization.

Innovation

David Earley, Director of Supply Chain Marketing at Cotton Incorporated, presented developments at the product level, including WICKING WINDOWS™, STAY TRUE COTTON™, and STORM DENIM™ technologies.

While the cotton industry is prohibited by law from attacking other fibers through advertising, some retail ads for garments made of synthetic fibers pull no punches.

To help cotton remain competitive in the athletic apparel market, Cotton Incorporated developed WICKING WINDOWS technology. It is designed to wick moisture away from the skin through absorbent windows spread along the outside surface of the garment, resulting in reduced fabric cling to the skin and faster drying with less absorption. In one-way moisture transfer tests, 100-percent-cotton garments with WICKING WINDOWS technology outperformed garments made of synthetic fibers.

In absorbent capacity testing, WICKING WINDOWS technology reduced absorbency by 40 percent in garments made of 100 percent cotton, bringing the moisture retention to a level comparable to garments made of synthetic fibers. WICKING WINDOWS technology also reduced the gravimetric drying time of 100-percent-cotton garments. "We're now taking this message out to the industry and also to the consumer telling them how cotton is not the enemy; it's your new best workout buddy," Earley said. "It's something that can be much more comfortable than the synthetic products."

STAY TRUE COTTON technology was developed in response to market research indicating that 75 percent of consumers plan for their next purchase of denim jeans to be a medium-to-dark shade. The technology is designed to help retain the original color of dark or tinted denim, improve crockfastness (resistance to color transfer) before and after laundering, and lock in the original color to keep it from washing away.

Garments with the STORM DENIM application suspend water molecules on the fabric surface while allowing water vapor and air to pass through, which maintains breathability and comfort. Canadian manufacturer MWG Apparel has implemented this technology in a line of their blue jeans, which they released to 49 retailers in British Columbia in February 2008. With the harsh, wet winters in the province northwest of Washington state, the jeans have been well received by consumers. Brian Gibson, President of MWG, said that one customer bought a pair, and then returned three days later to buy "absolutely everything in her husband's size and then had them phone the next store about 20 miles away; she did the same thing there."

At the other end of the supply chain, innovation is also taking place in the field. Kenneth Hood, President of Hood Farms & Gin Company, shared that the modern grower's survival is caught in the balance between increasing costs and decreasing returns while confronted by global competition and increased demand for better quality. To meet these challenges, Hood has implemented a precision agricultural approach for least cost production at his farm, which includes variable-rate seeding, variable-rate fertilization, spatially variable insecticide application, spatially variable plant growth regulation, crop termination, and spatial weed control.

The use of spatially variable insecticide applications has resulted not only in reducing the impact of cotton on the environment, but also in efficiency and cost savings. By using aerial imagery as a guide, a GPS-equipped applicator can spray only where needed. During the 2007 growing season, the technology enabled Hood to determine that only 1,046 of 1,825 acres needed pesticide application, resulting in a 43 percent total chemical reduction and $4,120 in chemical cost savings. §

***Winchester** from Page 3*

foam pad batch dyeing, advanced process control, and membrane filtration.

Of these approaches, membrane filtration is the technology that dyers and finishers have been using widely during the past two decades to conserve water and use it most effectively. Membrane filters are made of very fine, porous materials. Various pore sizes allow for micro-, ultra-, and nano-filtration.

Membrane filtration requires no changes inside a textile plant. Instead, a series of filters are installed in the wastewater system, which allows for up to 95 percent of the water to be recycled into the dyeing and finishing process. This technology also allows for dyes and chemicals to be recycled, further reducing both the environmental footprint and manufacturing costs.

With the implementation of membrane filtration, and with the effective management of existing technologies, such as turning off faucets, not overfilling vats, and mixing dye chemicals correctly to avoid unnecessary discarding, Dr. Winchester said that a manufacturer's water consumption can be reduced by 70 percent and result in an industry cost savings of $15 billion.

Reducing water consumption in the dyeing and finishing process results in the reduced consumption of both energy and chemicals. Less water means less energy is needed to heat the water for the dyeing process, a potential industry savings of $8 billion. The chemical footprint can be further reduced by continuous processing with membrane filtration. §

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