

The  
**Cotton**  
**Foundation**



**Report to Members**  
**2000**

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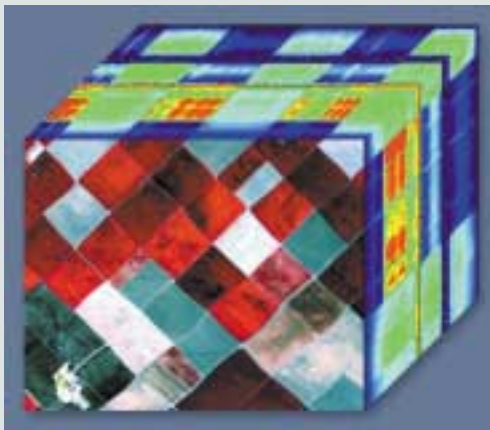
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On the cover: University of California researchers are evaluating remote images - in the form of this color-coded map of San Joaquin Valley cotton fields - to determine if such images taken from high altitude aircraft can be useful in the early detection of crop damage (see project on page 7).

## THE COTTON FOUNDATION

As a 501c3 organization, The Cotton Foundation permits the broadest possible participation by cotton industry suppliers. Supplier member dues and grants to the Foundation are used exclusively for cotton research and education.

The Foundation's mission is to provide vision and leadership to the U.S. cotton industry through research and education in support of the National Cotton Council and allied industries.

Major goals established to help the Foundation carry out its mission are:

- ◆ support Foundation leadership and member education programs;
- ◆ provide educational programs that improve the safety, productivity and environmental stewardship of the industry workforce;
- ◆ identify short and long term problems and critical issues facing the U.S. cotton industry and develop and implement projects to address issues or needs;
- ◆ develop and provide funding for programs to help influence industry and government research;
- ◆ identify long-term, industrywide strategic issues that will affect the cotton industry; and
- ◆ identify and assess the impact of proposed regulations in a timely manner.

# President's Message

In the midst of an escalation of corporate consolidations in agribusiness, support for The Cotton Foundation has not waned. A record level in membership dues was available to fund 33 general projects for the 1999-00 Foundation year. As of June 30, the end of the Foundation's 1999-00 fiscal year, there were 69 member firms contributing dues.

Consolidations still pose a challenge. However, they have occurred throughout the Foundation's history, and the institution has continued to grow stronger.

I believe our members recognize the Foundation is integral to a sound cotton research and education effort that is aimed at improving industry members' profitability. They also know U.S. cotton industry members have benefited from being the first adopters of innovative technology and expect to have continued initial access to those tools. That's why I believe the corporate member firms will not allow Foundation support to diminish.

During the past year, the Foundation continued to target its resources, valued at nearly \$1.75 million in dues and special grants, to research and education that supports National Cotton Council (NCC) objectives. Industry leaders' vision to acquire a Washington, DC, building for housing the NCC and Cotton Council International offices also is bearing fruit. That rental income was a factor in the Foundation Trustees' being able to approve 31 projects for 2000-01.

The major objective of this annual report is to communicate the scope of research and education supported by the Foundation in 1999-00. This is being amplified by articles being generated by several key agriculture editors who recently observed some examples of the leading-edge Foundation-supported research being conducted.

What they saw firsthand in the Far West tour were: 1) a system being developed to eliminate an aflatoxin-producing fungus that is causing a \$20-\$50 per acre annual revenue loss to Arizona cotton growers; 2) trials of ultra-narrow-row systems that have produced \$50/acre production cost savings, including a 50 percent reduction in water use, and higher quality fiber; and 3) a team of university, USDA and NASA scientists looking at ways to use remote sensing data that could eventually help growers quickly assess plant stresses caused by water deficiency, insect infestations or soil problems such as high salinity.

The Foundation supported numerous other general projects this past year in areas ranging from cottonseed quality improvement to gin emissions. All of these projects are helping to grow the knowledge base in order to solve problems and enhance profitability.

Under the profitability initiative general project, the NCC identified programs in which its participation would enhance the ability to carry out strategic recommendations. Generated by a consultant working with key scientists, crop consultants, industry members and others, those recommendations include: 1) continued support for precision agricul-



ture initiatives, 2) public support for crop genetic programs, 3) an accountability system for determining cotton research priorities and 4) Internet initiatives that include coordination of information to help speed adoption of emerging technology and to assure industry members gain more value from those data and tools.

Special projects, those funded by member grants over and above their dues, are stronger than ever, too.

Some of these are in their second decade of existence. The Cotton Leadership Program, for example, will induct its 18<sup>th</sup> class in September 2000. That means 180 men and women have been given the opportunity to develop their leadership skills and learn a great deal more about U.S. cotton and the challenges associated with guiding this industry into the new millennium.

Special projects, such as the Cotton Millennium Scholarship, fill unique niches in the overall cotton research and education program. Another new project, Funding for the Future, actually is raising funds for Foundation projects through an auction of items at the Beltwide Cotton Conferences.

The U.S. cotton industry is among the most productive industries in the world. Part of that productivity edge is from being the first user of innovative engineering, chemical, genetic and information technologies.

While private industry and the public sector support this research, the Foundation remains committed to furthering producers' understanding of what already is known, such as the biology of the cotton plant.

Knowledge of the basics coupled with adoption of new technology, for example, can help producers improve their crop management skills.

The NCC believes in the timely transfer of new technology to its membership. Education is foremost in many of its general and special projects, including support of the Beltwide Cotton Conferences and efforts that underwrite newsletters, Web sites, displays and other means of disseminating useful information.

The Foundation is helping industry members respond to the transformation of the Internet, which is changing the way industry members do business. The Internet Center at the Beltwide Cotton Conferences, for example, provides attendees with training in basic skills for using the Internet as an online information and research tool.

The Foundation's existence also makes it possible for the U.S. cotton industry to benefit from endowments. The Robert and Lois Coker Trustees Chair in Molecular Genetics is making it possible to discover novel genes to increase yield and fiber quality. The C. Everette Salyer Cotton Research Fellowship supports graduate students working in areas ranging from ultra narrow row production to biological controls.

David L. Burns, President



The Cotton Foundation

## Market Development

### Contamination – Educational Mini-Exhibit Update

New table-top displays aimed at raising awareness about seed cotton and lint contamination were distributed. The displays are a continuation of an education program that began with the T-shirt exhibits distributed to gins in 1997 and 1998. The new displays continue to remind gin workers and producers of ways to prevent contamination.

### Cottonseed Quality Improvement

The goal of this project is to improve the quantity and quality of oil and protein in cottonseed in order to maximize economic benefits for producers and processors.

Breeders at the Texas A&M Agricultural Experiment Station in Lubbock have screened 129 breeding lines for seed quality profiles and found total protein content of cottonseed meals ranging up to 40 percent, compared with about 15 percent in typical commercial varieties. Work continues on determining oil and protein quantity, fatty acid and amino acid profiles, and Vitamin E and gossypol content to determine the relationship of these traits to agronomic properties and lint yield. The objective is to selectively breed for these traits, release germplasm and develop enhanced cultivars.

Other project contributors include: the Southern Cotton Ginners Foundation (SCGA), the Texas Food and Fibers Commission and Cotton Incorporated.

### Nutrient Variability of Cottonseed Meal

There is potential for increased use of cottonseed meal in poultry diets if nutrient variability can be minimized.

The National Cottonseed Products Association (NCPA) collaborated with poultry scientists at the University of Arkansas to illustrate the nutritional consistency of cottonseed meal samples taken from various suppliers. Variability of fat, fiber, crude protein, amino acids, moisture and gossypol was studied. The final report will be provided to poultry nutritionists.

The SCGA contributed to this project.

### Detection of Seed Cotton Contamination by Ion Mobility Spectrometry

Plastic fiber, a contaminant similar mechanically to cotton fiber, accounts for more than half of the materials that contaminate yarns and fabrics. This contamination costs as much as \$5 million annually in damaged textile goods. The need exists to develop a system to detect the contaminants in the raw material early in the ginning process before the contaminants are dispersed through large amounts of fiber by gin and textile mill machinery.

Engineers at the the USDA-ARS Southwestern Cotton Ginning Laboratory in Mesilla Park, NM, working with scientists at New Mexico State University and the Massachusetts Institute of Technology, are developing miniature ion mobility spectrometers (IMS). Using this same technology that is used to detect explosives at airports and toxins on the battlefield, the goal is to produce an inexpensive, but rugged device that can be used to detect plastics in seed cotton so they can be removed early on in the ginning process.

## Using a Pelleted Mixture of Cottonseed Meal and Hulls to Replace Alfalfa Hay in Diets For Stressed Feeder Calves



The growth performance of stressed calves fed a cottonseed hull/meal pellet (inset) was compared to that of stressed calves fed alfalfa.

Scientists at Kansas State University demonstrated that a pelleted cottonseed co-product (65 percent cottonseed hulls/35 percent cottonseed meal) is comparable to alfalfa hay in diets for stressed calves. There was no difference in survival rates of stressed calves fed both diets.

Blending hulls with cottonseed meal and subsequent pelleting offers distinct advantages in terms of transportation, ease of handling and protein content – factors that improve the marketing radius. The researchers concluded that use of this byproduct for receiving diets in areas of the U.S. where alfalfa is priced at a premium is recommended.

A marketing brochure is now being developed to target potential end users of cotton co-products. The publication will present valuable research information and guidelines for optimum use. The NCPA contributed to this effort.

### Profitability

#### A Look at Row Spacing to Reduce Cotton Production Costs

In 1998 and 1999, University of California researchers developed a narrow-row cotton production system by planting two rows of cotton 10 inches apart on 30-inch beds, with a plant population of about 100,000, as opposed to the conventional 30,000 to 60,000 plants per acre.

Using existing irrigation and picking equipment, growers can realize savings from \$60 to \$80 per acre over conventional production as a result of less labor and fewer chemical inputs. Yields also increased by nearly 200 pounds per acre.

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Volatile organic compounds (VOCs) released by heating plastics during the ginning process have proven to be a good way to detect contaminants. Thus far, researchers have found that the VOCs released by heated cottonseed and cotton fiber can be differentiated between those produced by heated plastics. The implications for IMS detector design, therefore, are encouraging.

Work on this project is supported by the Southern Cotton Ginners Foundation.



A micromachined Ion Mobility Spectrometer (IMS) drift tube (far right) is the future generation of IMS sensors being tested for detecting contaminants in cotton at gins before they get into finished goods such as this shirt that was contaminated with hay baling twine. The tube was used in a device that Desert Storm troops used to detect nerve gas.

Arizona researchers demonstrated net cost savings of more than \$100 per acre, including a 50 percent reduction in water use, on an Arizona farm of flat-planted, 10-inch drilled ultra-narrow-row (UNR). By employing spindle pickers rather than strippers, cotton can be marketed without penalties associated with stripper cotton.

During the 2000 season, two alternative, UNR production systems deemed to have the most promise of reducing costs in the arid West are being studied at several locations in Arizona and California. Included are: 1) double rows planted on beds, spindle picked and 2) flat planted (10–15-inch row spacings), stripper picked. Plant monitoring, fiber quality, final mapping and yield data will be done plus input evaluation.



California producer Ken Van Loben Sels' modified planter was used to plant unique ultra-narrow-rows of cotton in a trial system that is suitable for spindle picking.

## Beltwide Cotton Production Conference Planning

Along with National Cotton Council (NCC) staff, this conference's planning committee includes representatives from such key groups as the American Cotton Producers, The Cotton Foundation, the National Cotton Ginners Association, Cotton Incorporated, the USDA Extension Service and the conferences' technical session chairmen.

The 2000 Beltwide Cotton Production Conference program benefitted from this panel's effort. A large number of cotton producers from across the Cotton Belt addressed topics of high priority to their peers. These producers shared their insights on topics that reflected the needs and desires of producers, including ways to minimize per-pound production costs and to manage seed selection and pest control.

## Boll Weevil Eradication Techniques For Sensitive Sites

Researchers at New Mexico State University continued testing a number of techniques to develop eradication methods for fields near sensitive sites in urban areas. From 1999 tests, they determined that use of microencapsulated malathion enhanced control of boll weevil while minimizing potential drift out of the field.



New Mexico State University researchers tested a number of unique strategies that could fit in boll weevil (inset) eradication programs near populated areas.



## Cotton Engineering, Ginning and Mechanization Endowed Chair

The Texas A&M University Chair in Cotton Engineering, Ginning and Mechanization was established to provide for the continuation of leading-edge research programs in cotton engineering, including producing, harvesting, processing, storing and manufacturing of cotton and cotton products. Among other goals are to expand technology transfer efforts, strengthen undergraduate and graduate education programs in the university's Agricultural Engineering Department and develop student internships in all industry segments.

The Foundation has a five-year commitment to the endowment supporting this Chair. The Agricultural Development Office of the Texas A&M Foundation reports that by mid-2000 about \$580,000 had been committed through nationwide solicitations. The A&M Foundation will match the funding with an additional \$500,000.

## Cotton Insect Hotline

This hotline has been highly effective in allowing producers, consultants, Extension personnel, county agents and others access to information that can help them with crucial pest management decisions during the growing season.

In 1999 and 2000, cooperators in Arkansas, Mississippi, Louisiana, Alabama, Georgia, Florida and California operated hotlines. The entomologists in these states record timely updates on cotton insect situations. These updates, which are changed as often as necessary and available 24 hours a day, can be reached by calling toll-free 800 numbers.

## Development of an Economic Model for Cotton Insect Management After First Flower



University of Arkansas entomologist Dr. N.P. Tugwell, right, discusses COTMAN plant monitoring techniques with Leslie Williams, a student who collected COTMAN field data for the past three seasons.

Objectives of this multi-year project are to help producers reduce their insect control costs, better manage pest resistance and increase public awareness of producers' environmental stewardship.

University of Arkansas researchers are developing an economic injury level model for insect control rules for the period "after first flower." The plant's stress resistance is being measured and used to assess the dynamic boll-loading shifts associated with insects, photosynthesis and boll competition for resources.

Crop practices and insect control tactics, such as natural enemies, will be integrated both prior to first flower and after first

flower with reference to optional tolerance levels for square and boll abscission rates. The ultimate goal is to incorporate the economic injury level model after first flower into the COTMAN computer software, which already contains a model for insect control rules before first flower.

The *Journal of Cotton Science* (JCS) residing at [www.jcotsci.org](http://www.jcotsci.org) continues to give producers, researchers, Extension personnel and others a central, easily accessible base of proven research findings in disciplines ranging from agronomy to textile processing.

The NCC's Dr. Anne Wrona serves as managing editor of the JCS, which strives to: 1) bring documented research together from many disciplines, 2) stretch researchers beyond the horizons of their individual expertise and 3) stimulate more multidisciplinary projects.

To date, 160 manuscripts have been received and placed into peer review. Of those, 61 have been accepted, published online and also archived on CD roms as Volumes 1, 2 and 3 (1997, 1998, 1999). JCS is indexed in AGRICOLA, the database of the National Agricultural Library. It was the first all-electronic journal to be given this honor, which will help it gain the recognition and stature of a top-rated publication.



The on-line *Journal of Cotton Science* provides scientists from all disciplines a rapid outlet for their research findings.

### Evaluation of the Cotton Genotypes For Tolerance or Resistance to Early Season Thrips Injury

University of Arkansas research is aimed at identifying cotton varieties with genetic tolerance or resistance to thrips – which would improve seedling vigor and potentially improve the plant's ability to survive disease attack. At the least, cotton plant resistance to thrips injury potentially would reduce or eliminate the need for early season insecticide use and increase the probability that the beneficial arthropod population would survive to combat secondary pest outbreaks.

### Evaluation of Advanced Hyperspectral Remote Sensing for Early Detection of Crop Damage

Input costs continue to escalate, affecting cotton producers' bottom lines. Development of commercially useful precision agriculture applications can help them more profitably produce cotton.

Hyperspectral remote sensing is a technology that has the potential to detect early stages of crop damage. Having reliable remote sensing data will help growers spot treat fields with more efficient input use before serious economic loss has occurred. The ultimate objective of this project is commercialization of software for agriculture applications of remote sensing. Growers would be able to refer to the in-season spectral maps for use in repairing broken irrigation lines, better determining when to apply defoliant or spot treating insects before crop yield is seriously compromised.

University of California-Davis researchers conducted large-scale field tests in 1999 and 2000 on Ted Sheely's San Joaquin Valley farm in order to refine methods of accurately measuring spatially explicit canopy conditions such as movement and presence of insects. Repeated measurements were analyzed and displayed as color-coded maps showing changes in the spectral signatures that correlate to changes in the crop's condition.

Thus far, more than 100 cotton cultivars have been evaluated in field screening tests for thrips resistance in Arkansas. These tests have indicated that DeltaPine 42B, Paymaster 1266, Empire WR61, Asiatic 49 and Asiatic 154 are potentially resistant to thrips feeding.

The daily sampling tests in 1999 revealed that thrips are present on the cotton as soon as it emerges and that adult thrips comprise most of the population for the first four days and then larvae thereafter.

Work in 2000 is focusing on additional cultivar screening and studying those cultivars showing resistance through plant mapping techniques and any other available test to determine the impact of thrips injury.

### **National Cotton Council/Cotton Foundation Web Site**

The NCC/Foundation web site was redesigned and moved in-house in 1999. Since then, the site has had an 88 percent increase in traffic, with more than 9,000 unique users visiting the site in March of 2000. Among additions to the site were: streaming audio and video for AgDay Cotton's Week, Cotton Newslines, reports from the Beltwide Cotton Conferences and the NCC's annual meeting and monthly reporting of site statistics. New online features are: educational materials ordering, Beltwide Cotton Conferences registration and proceedings and a searchable database of cotton physiologists.

NCC staff, under guidance from the organization's World Wide Web Project Team and the Industry Oversight Team, is now developing the NCC/Foundation site as a central online source of information about the U.S. cotton industry. Some of the tasks will include training staff users to maintain their site sections, updating the Frequently Asked Question section and moving the EconCentral Web site to the NCC server and incorporating it into the NCC site framework.



Canopy stresses in cotton on Sheely's farm were mapped. Field and image data taken from 1999 were analyzed and compared to the yield map. Additional field measurements were taken in 2000 to support hyper-spectral remotely sensed data from aircraft. The results will be compared to field measurements of crop conditions taken by USDA collaborators at the University of California, Shafter Field Station.

Cotton Incorporated and NASA also provide funding for this project.

**University of California doctoral students Jonathan Greenberg, right, and George Scheer collect field spectra data from cotton plants in grower Ted Sheely's field as part of an effort aimed at early detection of crop damage using remote sensing technology.**

## Graduate Research Fellowships

One Texas A&M University graduate student completed a master's program and another finished a doctoral program in 2000 through this fellowship program. The Foundation and university contributed half of their \$17,000 stipends.

This program helped strengthen the resource of well-educated and experienced agricultural professionals. The graduate students were able to work effectively with experienced engineers and research scientists.

## Implementation of Profitability Initiative

In 1998, the Foundation's "Cotton Industry Profitability Initiative" was implemented to develop strategic steps to improve the unit cost of production. Action steps were developed after a consulting company, on behalf of the NCC, conducted extensive interviews with key industry innovators, crop consultants, Extension and researchers throughout 1999.

The NCC is now in the process of identifying new, start-up or existing programs in which NCC participation would enhance the ability to carry out the following consultant recommendations: 1) continued support for precision agriculture initiatives, 2) public support for crop genetic programs, 3) an accountability system for determining cotton research priorities and 4) Internet initiatives that include coordination of information to help speed adoption of emerging technology and to assure industry members gain more value from those data and tools.

## Management of Ultra-Narrow-Row Cotton Production

A Texas A&M University graduate student is trying to determine the best way to manage the fertility and varietal interactions in an ultra-narrow-row cotton production system.

Responses of cotton in 7.5-inch row spacings are being compared with those of two other narrow row spacings, 15 and 30 inches, under varying nitrogen rates. Photosynthetic rates are being compared among the treatments to determine if differences exist. Data is being collected on seed cotton yield, percent gin turn-out and fiber quality properties.

## Gin Management & Technology (GMT) Program Enhancements

This project helped Mississippi State University construct a micro-gin at its Pace Seed Technology Laboratory. The gin, which became partially operational in 2000, will greatly extend the learning opportunities for students in the university's Gin Management & Technology Program. That includes course work and a one-semester internship at a cooperating gin.

The long-term goal is to provide professionals for an ever-changing cotton ginning industry. The SCGA contributes to this effort.

**The Foundation supported the 1999 installation of a micro-gin at Mississippi State University that is enhancing the training of students in the university's Gin Management & Technology program.**



## Survey of Cotton's Losses to Pests



The Foundation supports the annual Surveys of Cotton's Losses to Pests, which estimates losses due to disease, weed and insect pests, such as this stinkbug.

Annual estimates of cotton losses due to specific disease, insect and weed pests are made available to public and private sectors through such vehicles as the *Beltwide Cotton Conferences' Proceedings*. This data helps in decision making ranging from cotton farm policy to the advocacy for re-registering current plant protection chemicals and registering new ones.

Much progress has been made in the assessment methodology and the scope of the reporting, which is gathered at the Coordination Center at Mississippi State University. For example, the insect losses, which began with a single-page report in 1979, featured 40 pages of data and tables in 1999.

The 1999 losses reports, for example, show that losses to diseases and nematodes were 2.3 million bales valued at more than \$904 million dollars while losses to insect pests reached \$1.27 billion or \$93.34 per acre. The report provided such detailed data as: arthropod pests reduced overall yield by 7.66 percent in 1999 and the cotton fleahopper was the Number One pest causing a 2.36 percent yield reduction across the Cotton Belt.

In addition, computerization of pest losses now has been completed. The insect loss database includes all 20 years of data from 1979-1999 and the weed loss database includes all 21 years of data published in the Beltwide Proceedings back to 1952, when figures for diseases were first published. Only a summary of disease damage is available from 1952-1964, while state-by-state data is available from 1965-1999. The next phase will be to put the database on the NCC's web site or on CD.

### **Web Site Maintenance and Data Acquisition for WeatherCentral: A Customized Weather Web Site of Current Observations, Forecasting, Mapping and Historical Comparisons**

Visitors to the NCC's Home Page can find hourly updated weather conditions and forecasts for nearly 500 U.S. cities. The site also allows the user to quickly obtain all current weather observations and forecasts for a specific location anywhere in the world along with regional maps of the most pertinent U.S. information.

The daily weather data also is accumulated in a database in which users can compare historical growing degree days with current conditions for all U.S. cities.

### Cotton Cares: An Environmental Excellence Program

This voluntary environmental excellence program challenges its producer participants to communicate to the public about environmentally responsible conventional cotton production practices. Another aim is to demonstrate that many voluntary production practices are enhancing air, water and land quality thus precluding the need for increased regulation and legislation.

Cotton Cares concepts and program features have been integrated into a system providing cotton producers in North Carolina's Neuse River Basin with tools to cope with "Neuse Rules," which are anticipated soon. These rules address concerns over nutrient content of the Neuse River.



The Cotton Cares program encourages producers to follow good environmental stewardship practices while meeting the objectives of efficient cotton production.

### Cyclone Testing

Cyclones are the most effective and least costly air pollution abatement systems available for cotton gins. The goal of this project is to determine the most effective and least costly cyclone systems that can be used to reduce particulate matter (PM) emissions from cotton gins.

Among research findings thus far are: the 1D3D\* is the best design for fine dust collection; lint fiber entering the cyclone affects 1D3D and 2D2D performance characteristics; cycling lint did not increase the emission concentrations of the 1D2D and Barrel cyclones; and 1D2D cyclone emission concentrations with inlet loadings containing lint fiber, trash and fine dust were much lower than emission concentrations of 1D3D and 2D2D cyclone designs for the same inlet loading rates.

Texas A&M University engineers will continue to test 1D3D, 2D2D, 1D2D and Barrel cyclones with different inlet loadings of high and low lint trash plus fine dust. The results will be used to determine the best and most efficient cyclone systems.

\*Nomenclature relates to relative size of cyclone diameter, body length and cone length.

### Development and Commercial Evaluation of the Use of Atoxigenic Strains to Prevent Aflatoxin Contamination

Aflatoxins are toxic chemicals produced by certain fungi when they infect cottonseed. The presence of aflatoxin-producing fungi in agricultural fields can be reduced by applying atoxigenic (non-aflatoxin producing) strains of *Aspergillus flavus* at lay-by. The atoxigenic strains are applied on sterilized wheat seed either by ground or air. Atoxigenic strains have been applied on select Arizona cotton fields since 1996, and results thus far indicate that long-term useful reductions in the aflatoxin-producing potential of fungal communities can be achieved by atoxigenic strain application.

Studies performed in 1999 under the direction of USDA Agricultural Research Service scientist Dr. Peter Cotty indicated influences of the atoxigenic strain applications may gradually decline over several years. Multiyear influences were detected in all treated fields and, in one field treated in only 1996, influence extended over three years.

In 2000, plans are to expand tests to 20,000 acres of cotton in four different cotton-producing areas of Arizona. Evaluations will be performed by tracking fungal communities in select fields and by mapping aflatoxin contamination at the gin level.

## Determination of PM<sub>2.5</sub> Emission Levels from Commercial Cotton Gins



USDA and university researchers are cooperating in a study to accurately measure gin particulate emissions levels in order to meet any environmental or regulatory air quality concerns.

Scientists are developing accurate emission data for (particulate matter) PM<sub>2.5</sub>\* and PM<sub>10</sub>\* emissions from commercial cotton gins, that are using the best available control technology for their emission control systems. This information is needed to determine the concentration of PM<sub>2.5</sub> emitted by gins and to help cotton gins comply with National Ambient Air Quality Standards for PM, including the new PM<sub>2.5</sub> standard.

In addition, the information is needed to challenge the current computer model that state and federal agencies are using to predict PM concentrations at the boundary line. That model, which was developed for industries that use single, very tall emission stacks such as power plants and steel mills, is inappropriate for use with agricultural processing operations, like cotton gins.

This project is jointly conducted by the cotton industry, Texas A&M University, University of California-Davis and USDA. Researchers are analyzing data collected during the 1999 ginning season. They measured upwind and downwind area particulate concentrations and individual cyclone stack particulate emissions data.

\*Nomenclature relates to size of particles, 2.5 microns and 10 microns, respectively.

## Implementation of the FritzZwicke Dispersion Model for Agricultural Facilities

Texas A&M University scientists are testing the performance of a dispersion model that predicts downwind concentrations of pollutants from gins and agricultural operations. The aim is to improve the model's accuracy in hopes that EPA will approve it for use as a predictor.

The Southern Cotton Ginners Foundation contributes to this project.



During the 2000 season, Arizona collaborators will work on developing protocols for implementing area-wide aflatoxin management programs and on developing initial recommendations on the best cultural practices to ensure successful applications of atoxigenic strains. Dialogue will continue with EPA on requirements for registration, manufacture and expanded commercial use of the atoxigenic strain-based products. Efforts also will continue on development of atoxigenic strain manufacturing processes for potential use by grower cooperatives.

The USDA Aflatoxin Working Group and Cotton Incorporated also are supporting this work. Studies also have been initiated on aflatoxin-producing fungi in South Texas, which has experienced devastating aflatoxin contamination of cottonseed and corn the past two years.

As part of a successful aflatoxin contamination project, sterilized wheat seed inoculated with atoxigenic aflatoxin strains (inset) is mixed with fertilizer as a means of spreading it onto Arizona cotton fields.

## **Use of Particle Size Distributions For Measurement and Modeling of Emissions from Agricultural Operations**

Sizing particulate matter (PM) sampled downwind from an agricultural source is a critical area of science to ensure that sources are regulated fairly. Researchers at Texas A&M University have determined from the particle size distributions (PSD) of PM captured by the Cascade Impactor that a relatively high fraction of larger than PM<sub>2.5</sub> PM is being captured and thus the instrument yields inaccurate results for PM<sub>2.5</sub> emitted from cotton gins and soil from field operations.

This research, which is supported by the Southern Cotton Ginners Association, will analyze the PSD of cotton gin dust samples using both the Coulter Counter Multisizer and Cascade Impactor. The engineers plan to develop a more accurate means to predict downwind concentrations of PM<sub>2.5</sub>. The ultimate goal is to obtain EPA approval of the Coulter Counter Multisizer method for the determinations of PSDs of agricultural emissions of PM.

### **Evaluation of PM<sub>2.5</sub> Samplers Using the Coulter Counter Multisizer**

It is likely that a particulate matter (PM<sub>2.5</sub>) National Ambient Air Quality Standard (NAAQS) will be approved in the near future, and that this will result in a significant increase in the number of nonattainment areas, including many where cotton is grown and ginned.

For emission inventories for gins and agricultural field operations to be accurate, it is necessary to determine if the data obtained by sampling with EPA-approved Federal Reference Method (FRM) samplers are accurate. PM<sub>2.5</sub> emission factors for gins and field operations are being determined using EPA approved samplers.

Texas A&M University researchers will continue to evaluate the various PM<sub>2.5</sub> FRM samplers and also develop a high volume PM<sub>2.5</sub> sampler that can be used to measure PM<sub>2.5</sub> concentrations more accurately.

### **MACT Standard for Vegetable Oil Processing**

By November 2000, EPA is required by the Clean Air Act to issue a national emissions standard for hazardous air pollutant regulation for solvent extraction for vegetable oil production. Compliance with this standard will involve the installation of Maximum Achievable Control Technology (MACT) for emissions of n-hexane, a hazardous air pollutant, from oilseed crushing plants. The plants will have three years to comply with the standard, compliance with which is expected to be very stringent and costly.

The NCC participated in an oilseed industry coalition that responded to EPA requests for information on emissions data, control technology and economic data and explored control procedures in an effort to minimize the compliance burden for cottonseed oil mills.

### **Reliability of the Endotoxin LAL Assay as a Regulatory Technique for Measuring Environmental Endotoxin**

The National Institute for Occupational Safety and Health (NIOSH) and others continue to raise the issue of whether the U.S. should have a standard for endotoxin. The Dutch have a standard and other European countries are reviewing the issue. Airborne endotoxin appears to be a better predictor than gravimetric cotton dust of the risk for adverse pulmonary effects in textile workers. Because the component of cotton dust that correlates best with worker response is endotoxin, it is important that the questions this research is addressing be answered (i.e., can endotoxin levels be measured reliably enough for regulatory purposes?). Airborne dust samples were collected from a variety of environments containing endotoxin. These samples are being analyzed using both the



analytical procedure for extracting and measuring endotoxin developed at the NIOSH laboratories and the procedure currently being used by the Dutch government to monitor different environments as part of their newly promulgated endotoxin standard.

### **The Evaluation of the Use of Dust Masks on the Pulmonary Function of 12-Hour Shift Work in Cotton Textile Workers**

In a follow up to an earlier study sponsored by the NCC and the American Textile Manufacturers Institute, researchers are preparing to study the question of the necessity of adjusting exposure levels for novel/extended workshifts in textile mills and whether partial-shift wearing of respirators is acceptable.

In a previously related project, the cross-sectional study of 12-hour shift workers exposed to cotton dust at levels between 133 and 200  $\mu\text{g}/\text{m}^3$ , there was a statistically significant decrease in lung function ( $\text{FEV}_1$ ) from baseline at both eight and 12 hours. However, there was no difference in the response between eight hours and 12 hours.

These data suggest that the severity of the response did not increase with the additional four hours of exposure. Data collected were unchanged after controlling for gender, race and smoking and suggest that workshift, not dust, was the major variable influencing recovery prior to the next workshift.

### **Survey and Research on Potential Consumer, Environmental and Workplace Hazards**

The Cotton Foundation is cooperating with several associations in generating and compiling data useful in helping the U.S. cotton industry respond to rulemakings by various regulatory agencies to avoid unreasonable regulation and to carry out information/education programs. Thus far, burn incidence data from Consumer Product Safety Commission in-depth studies have been updated in the Institute for Textile Technology database. These data and other statistics were used to help retain beneficial amendments to the Children's Sleepwear Flammability Standard. NCC is part of several flammability research projects on upholstered furniture and mattresses/bedding. Information obtained on hexane emissions from oil mills helped get higher allowable emission limits for large and small cottonseed oil mills in EPA's standards for vegetable oil extraction due to be proposed in 2000 and finalized in 2001.

### **Worker Protection Standard Education**



Professional Consulting Services was retained by the Foundation for development of seasonal newsletters and information sheets as part of an educational package on compliance with the Worker Protection Standard (WPS) on the cotton farm.

Six newsletters and six topic-specific information sheets have been distributed to 10,000 producers, consultants, Extension personnel and others. Additional information sheets will be developed and distributed. All issues are available on the NCC's web site.

EPA staff are assisting in the project, including help with liberal interpretation of WPS implementation strategies.

**Newsletters and information sheets are helping cotton producers comply with the Worker Protection Standard.**

# Cotton Foundation Members\*

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Ag-Chem manufactures and markets the pre-emerge Terra-Gator high flotation applicator and the post-emerge RoGator high clearance sprayer. Ag-Chem also offers a line of high-tech, site-specific computer systems, software, data management and related support systems. Products are sold and serviced by a direct sales force to both dealers and farmers.



Agdia produces and distributes *Hel-ID*, the diagnostic test kit which identifies both the bollworm and the budworm in the egg stage and *Btk*, which detects Bt-endotoxins in transformed cotton and other plants for U.S. cotton producers. Agdia also develops test kits and lab testing services to detect pathogens in plants.



Ag Leader Technology manufactures a full line of precision farming tools, including yield monitors for cotton pickers and grain combines. The PF3000 monitor/controller with add-on GPS 3000, 3050 or 3100, or the ruggedized PF3000 Pro with built-in GPS; SMS Basic desktop PC software; and the parallel-swathing Lightbar, provide tools for year-round precision farming from soil sampling through fertilizing, planting, spraying and harvesting.



AgriPro Seeds is a leading marketer of one of the most complete lines of high quality cotton, hybrid corn, soybean, grain sorghum, sorghum-sudan, wheat and alfalfa products in the industry -making AgriPro your one source for your seed needs.



PROWL®: contributes to an earlier and more profitable cotton crop by effective weed control and superior crop safety. THIMET® soil and systemic insecticide: contributes to an earlier and more profitable cotton crop because of its effective insect control and superior crop safety.



AMVAC Chemical corporation develops and markets the following crop protection products for cotton growers in the United States: Insecticides, BIDRIN® and DIBROM® 8 EMULSIVE; Fungicides, BLOCKER™, PCNB 2-E, PCNB 10% granules, PCNB 75 WP and WIN-FLO®, and Soil Fumigant, VAPAM®. The plant is located at 4100 E. Washington Blvd., Los Angeles, CA 90023-4406 Customer Service Tel No. 888/462-6822 (GO-AMVAC).



Accelerate® A Harvest Aid For Cotton; PennCap-M® Insecticide.



TEMIK® insecticide-nematicide; ROVRAL® fungicide; LARVIN® insecticide-ovicide; BUC-TRIL™ 4EC herbicide; PREP™ cotton boll opener; FOLEX® cotton defoliant; FINISH™ cotton boll opener-defoliant-regrowth inhibitor. DECIS™ Insecticide; DROPP® cotton defoliant and re-growth inhibitor; OVASYN® Insecticide/Miticide; GINSTAR® cotton defoliant and re-growth inhibitor; SCOUT X-TRA® Insecticide; PHASER® Insecticide; FiberMax™ Cotton Seed.



BASF Agricultural Products strives to be the provider of knowledge and innovative solutions for cotton growers. Researching innovative crop management tools, such as Pix® Plus and Pix® Ultra plant regulators and developing the knowledge to implement profitable production techniques such as Ultra-Narrow-Row Cotton® are part of the commitment. More information about BASF, Pix® Plus, Pix® Ultra and Pix® plant regulators, Prowl® and Poast® herbicides and Thimet® soil and systemic insecticide, is available at [www.agproducts.basf.com](http://www.agproducts.basf.com).



Agriculture Division

BAYTHROID® insecticide  
DEF® defoliant  
DI-SYSTON® insecticide  
GUTHION® insecticide  
LEVERAGE™ 2.7 insecticide  
NEMACUR® nematocide  
ADMIRE® insecticide  
PROVADO® insecticide



Case Corporation is a leading worldwide manufacturer and marketer of Case IH agricultural equipment including tractors; COTTON EXPRESS pickers and strippers; AXIAL-FLOW combines; tillage, planting and seeding, hay and forage, and material handling products.



Cheminova A/S is the basic producer of time proven plant protection chemicals for cotton and the other crops. These products include METHYL parathion, ETHYL parathion, DIMETHOATE, FYFANON brand of malathion, NUFOS brand of chlorpyrifos and GLYFOS brand of glyphosate. Cheminova, Inc. is the distributor of Cheminova A/S products in the U.S.



Consolidated Cotton Gin Company manufactures a full line of cotton gin machinery, including pre-cleaning, ginning, lint cleaning and pressing systems for any capacity gin plant. Also offers design and construction of complete gin plants.



Complete Cotton Ginning Systems including gin stands, feeders, lint cleaners, pre-cleaning equipment, module feeders, suction unloading systems and a wide variety of baling presses; Acid Cottonseed Delinting Systems - IMPCO seed cleaning, mechanical cottonseed delinting and decorticator separator systems. - Textile Bale Presses - Repair and Service



DTN provides cotton producers with time-sensitive market information 24 hours a day. From futures and LDP rates to weather and news, DTN keeps the cotton industry informed. DTN Cotton Network provides an efficient electronic marketing tool for sellers and buyers as well as gin and warehouse software.



Delta and Pine Land Company is a commercial breeder, producer and marketer of cotton planting seed for the Deltapine, Paymaster and Sure-Grow product lines. For more than 80 years, the Mississippi-based company has used its extensive plant breeding programs drawing from a diverse germplasm base to develop superior varieties.



DirectAg.com is a comprehensive business-to-business Internet site providing agriculture producers with a broad offering of information and a growing number of agriculture products and services. DirectAg.com offers current markets and agriculture news, gives farmers free access to experts and makes name brand, high-quality products available any time of day or night.



Tracer\* Naturallyte insect control; Treflan\* herbicide; Lorsban\* -4E insecticide; Telone\* soil fumigant; Pendimax\* 3.3 herbicide; and Glyphomax\* Plus herbicide. (\*Trademark of Dow AgroSciences LLC) Additionally, PhytoGen™ cottonseed. (™Trademark of PhytoGen Seed Company, LLC)

Asana® XL, Lannate®, Steward™\* and Vydate® CLV insecticides; Assure® II, Bladex®, Harmony Extra® and Staple™ herbicides. \*EPA registration pending.



Ecogen Inc. is an agricultural biotechnology company specializing in the development and marketing of environmentally compatible products for the control of pests in agriculture and related markets. Ecogen's main products for cotton are Condor®XL, Condor®OF and MVP®II insecticides as well as SperSal® soil amendment.



EDEN Bioscience Corporation is currently developing Messenger Technology, a new category of plant protection and crop production technologies for the cotton industry. We encourage you to visit our web site, [www.edenbio.com](http://www.edenbio.com), and learn more about Messenger Technology and harpin proteins.



EnviroLogix develops rapid test kits for detecting and measuring GE (genetically enhanced) traits in genetically modified varieties of cotton and other crops. Two test formats: lateral flow QuickStix(tm) strips for rapid yes/no results in 5 to 10 minutes and the microwell plate format for quantitative results within 2 hours. Tests for Bt cotton seed and plant tissue (Cry1Ac) are currently available, others are under development and coming soon.

## Farm Journal

FARM JOURNAL, the nation's largest circulation magazine for farmers, has been a voice for American agriculture since its founding in 1877. In its COTTON TODAY section and throughout the magazine, award-winning editors analyze crop production, agricultural policy and marketing. The Farm Journal Corporation publishes TOP PRODUCER, BEEF TODAY and DAIRY TODAY magazines and PRO FARMER, AGTRADER and LANDOWNER newsletters. Its AgDay television program is seen on 175 stations and Farm Journal Radio Network is broadcast on 400 stations. FARM JOURNAL's content is found online at [www.AgWeb.com](http://www.AgWeb.com). For information, call 800-523-1538.



Sunbelt producers turn to the Farm Press publications for the timeliest, most thorough coverage of crops and issues important to them. Since Delta Farm Press started more than a half-century ago, the company's publications have become "the bible" in the areas they serve. The Farm Press division of Intertec/PRIMEDIA Publishing includes Southeast Farm Press, Delta Farm Press, Southwest Farm Press, Western Farm Press, Delta Agricultural Digest and Southeast Agricultural Digest. Delta Farm Press is co-sponsor of the Mid-South Farm & Gin Show, the South's largest indoor farm show, and produces the official program. Farm Press also produces or co-sponsors several other shows and conferences around the Sunbelt, as well as special publishing projects, electronic media and list rentals.

## FARM PROGRESS COMPANIES

Farm Progress covers the U.S. with 35 state and regional publications making it the nation's largest agricultural information provider. In addition, the company is a leader in database marketing and produces nine farm shows, including the Farm Progress Show, the Carolina Farm Show and the Mid South Ag Expo, new this year near Tunica, MS.



Supporting cotton growers by providing these cotton protection products - Ammo®, Fury®, Mustang™, Pounce®, Thiodan®-Cottonseed Oil, and Methyl Parathion-Thiodan insecticides; Capture insecticide/miticide®; Command® herbicide; Furadan® insecticide/nematicide.



Griffin Agricultural Chemicals Group provides Cotton Producers with quality cotton products including CottonQuik, Cotton-Pro®, Cy-Pro4L, Cy-Pro90DF, Direx 4L®, Direx®80 DF, Early Harvest® PGR, Mepex™, Meturon®4L, Meturon®80 DF, Super Boll, Trilin® and Trilin®5. For more information, contact Griffin Corporation, P.O. 1847, Valdosta, GA 31601, 912/242-8635.

## Gustafson

Gustafson LLC is North America's leading developer and supplier of proprietary seed amendment and seedling protection products. For cotton, these products include Gaucho® insecticide; Baytan®, Vitavax®, Thiram® and Allegiance™ fungicides; and Kodiak® biological fungicide. The Gustafson product line also includes seed coatings, seed treatment equipment, treatment applicators, automatic sampling equipment and stored grain protectants.



The most trusted, innovative and respected distributor of agricultural inputs in the Cotton Belt, Helena offers cotton producers a complete line of production inputs and services. Our expanding line of useful specialty products include high-quality inputs in many categories: Spray Adjuvants: Seed Treatments, Nutritionals and BioScience.



Industrial Laboratory Equipment Company, Inc., manufactures physical testing equipment that measures fiber properties and textiles to help mills and gins calibrate their equipment. The equipment also tests textile finishing and processing chemicals and dyes.



International Fiber Packaging is the world's leading bale packaging supplier. Manufacturers of: Cotton Topper® module covers; Car-Lok® and Herculite® bale ties; bagging including polypropylene, polyethylene, and burlap; and Ultra Twist® automatic bale tying and wrapping systems.



Worldwide manufacturer and marketer of Cotton Pickers, Cotton Strippers, Self-Propelled Sprayers, Tractors, Combines and a full line of Tillage, Planting, Hay and Forage, Consumer Products and Industrial Equipment.



THE KBH CORPORATION is the national leader in cotton handling equipment, manufacturing the "Cotton House" module builder, the "Mule Boy" cotton cart and liquid and dry fertilizer equipment.



The Keith Walking Floor module feeder is the safest, most versatile system available to provide steady metered flow to your dispersal head. No gear, rollers or chains to create safety hazards and maintenance problems. For the only module feeder you can walk and drive on, call Keith Sales Company today at 800-547-6161.



Lummus Corporation is a worldwide leader in the manufacturing and marketing of a complete line of cotton ginning machinery and replacement parts, including gin stands, feeders, lint cleaners, precleaning and baling equipment.



Providing research advice to growers and companies searching for answers to tough questions.



The great cotton industry is well-served by a host of Meister Publishing Company specialized agricultural offerings, including the largest-circulation vertical, COTTON GROWER, and its sister publication, COTTON GROWER PLUS, targeted to the business needs of 250+ acre growers. Meister is the world's largest publisher of cotton information, yearly producing COTTON INTERNATIONAL, the world's foremost annual publication summarizing global cotton production and marketing, as well as COTTON INTERNATIONAL'S "Global Meeting Preview", a mid-year edition covering issues facing the important international cotton gatherings. Other Meister offerings involved heavily in the production of cotton include AG CONSULTANT, FARM CHEMICALS, FARM CHEMICALS HANDBOOK, WEED CONTROL MANUAL and the INSECT AND DISEASE CONTROL GUIDE.

PGR IV, Mepichlor and Etephon plant growth regulators; Acephate, Azinphos Methyl, Dimethoate, Endosulfan, Malathion and Methyl Parathion insecticides; FLO-MET herbicide.



A manufacturer of agricultural and industrial chemicals which produces and markets all three primary crop nutrients. Nitrogen products are manufactured in Yazoo City, MS; Donaldsonville, LA; and the company's joint venture in The Republic of Trinidad and Tobago. These products include anhydrous ammonia, UAN solutions, nitric acid, urea and Amtrate. Potash is produced at Carlsbad, NM, and diammonium phosphate at Pascagoula, MS.



Monsanto develops and brings exciting new plant technologies to the cotton market. Now commercially available are the Bollgard gene for season-long in plant budworm and bollworm protection, and Roundup Ready cotton which allows in-crop treatments of Roundup Ultra herbicide for dependable, broad spectrum weed control in any cotton production system and all soil types. Both technologies are available in leading cotton varieties from multiple seed company partners.



The National Alliance of Independent Crop Consultants is a national organization representing more than 500 crop consultants and contract researchers across the country. Members are experts in crop care, integrated pest management, integrated crop management and contract research as well as applications in biotechnology and sustainable agriculture. Membership requirements include bachelors degree and four years of experience in agricultural research or in advising grower clients on how to integrate biological, cultural and other alternative practices into their crop production programs. Recommendations and/or technical data is provided for a fee that is itemized and billed to clients, and consultants do not receive compensation for a client's purchase of products.



National Bank of Commerce, Memphis: Financing cotton requires a lender with knowledge and experience. NBC has proven capabilities servicing the financial needs of companies involved in all phases of agri-business from producer to the mill.



The world leader in micro irrigation technology for more than 30 years, Netafim Irrigation, Inc., offers micro irrigation systems for cotton and other crops. Netafim systems include dripperline, valves, filters and air relief, and deliver precise amounts of water and nutrients to every plant in a variety of terrains and environments.



The New York Board of Trade is the parent company of the Coffee, Sugar & Cocoa Exchange (CSCE) and the New York Cotton Exchange (NYCE). Through its two exchanges and additional subsidiaries, including the New York Futures Exchange (NYFE), FINEX and Citrus Associates, NYBOT offers a wide variety of agricultural, financial and index products. The Cantor Exchange (CX), a venture of NYBOT and Cantor Fitzgerald, provides the first electronic, screen-based market for U.S. Treasury futures.



Curacron® and Zephyr® cotton insecticides; Caparol®, Cotoran®, Dual II®, Tough and Zorial Rapid 80 cotton herbicides; Ridomil Golds and Ridomil PC cotton fungicides; Apron® seed treatment for cotton. Novartis is the U.S. crop protection leader. It was formed in January, 1997 by the merger of Ciba Crop Protection and Sandoz Agro. Novartis provides proven products that help growers, agrichemical dealers and distributors capitalize on new technologies to meet their crop protection needs.

"OmniSTAR, Inc. provides high quality Differential GPS correction services over most of the World's major landmasses, including North, Central and South America. OmniSTAR capability is now built into a growing number of DGPS receivers designed specifically for agricultural applications. OmniSTAR is recommended for critical operations, such as equipment guidance and chemical application operations, where maximum accuracy and reliability are required."



Phylogen Seed Company, LLC is a joint venture between Mycogen Corporation, a subsidiary of Dow AgroSciences, and the J.G. Boswell Company. The company is marketing new cotton planting seed alternatives. Phylogen's cotton breeding program is focused on the development of insect and herbicide resistant derivatives of its new high yielding varieties.



Plato Industries, Inc. produces and supplies to Cotton Producers and Boll Weevil Eradication Programs Boll Weevil Attract and Control Tubes (BWACTs), Boll Weevil Traps, Trap Grandlure Pheromone Dispensers and Trap Insecticide Dispensers.



From P&G, the makers of Crisco, comes Olean, a new, fat-free cooking oil made from farm grown ingredients including cottonseed oil. Olean is processed in a special way, so it adds no fat or calories to snacks, such as potato and tortilla chips. Olean is currently used in Fat Free Pringles® in three flavors (original, sour cream 'n onion and barbecue) and Frito-Lay WOW! Chips (Lay's, Ruffles and Doritos).



PROGRESSIVE FARMER concentrates its editorial focus on the South and Midwest regions. Subject matter is localized to regional and state editions. More than 90% of editorial content is devoted to farm production, farm management, machinery, crops, livestock and other information applicable to Southern and Midwest agriculture. The PROGRESSIVE FARMER COTTON REPORT is a news-formatted publication emphasizing marketing, policy, economics and production. It is mailed to 100+ acre cotton producers. [www.progressivefarmer.com](http://www.progressivefarmer.com)



Rain and Hail L.L.C. provides cotton growers with insurance products to manage their downside production and quality risks. The same products can be used to backstop forward pricing and hedges that can result in improved prices and profits. We currently service more than 200,000 policyholders throughout the U.S.



Manufacturer of CONFIRM insecticide, DITHANE® fungicide, GOAL® herbicide, KELTHANE® miticide and LATRON spray adjuvants.



World's leading manufacturer of fully automatic strapping equipment for bale packaging developed the High Strength Tenax plastic strap to provide a reliable, cost effective and safe bale tie system for the cotton industry.



Southeast AgNet is the only localized agricultural radio network serving Florida, Georgia and Alabama. With four studio locations and 60 plus radio station affiliates throughout the region, Southeast AgNet provides daily news, weather and market analysis for southeastern agricultural producers.



The Southern Cotton Ginners Foundation is a non-profit organization composed primarily of Southern Cotton Ginners Association members in Mississippi, Arkansas, Louisiana, Tennessee and Missouri, and all other individuals interested in funding scientific, educational and charitable endeavors for the advancement and betterment of the cotton ginning industry.

## STOCKHAUSEN

### Degussa+Hüls Gruppe

Stockhausen, Inc. is a basic manufacturer of more than 800 polymers and specialty chemicals, with its U.S. operations based in Greensboro, North Carolina. It serves the agricultural market with two lines of polymers. Super-absorbent polymers, which trap water and water-soluble nutrients and make them available for plant uptake, and linear co-polymers, which increase efficiency of irrigation systems and reduce water and soil erosion.



## Stoneville

® Pedigreed Seed Company

Stoneville Pedigreed Seed Company is recognized throughout the United States as a leader in the cotton seed industry and the business of cotton plant breeding. Stoneville breeders constantly strive to improve the yield, quality and agronomic performance of each and every variety we release through the integration of value-added traits from biotechnology and a strong program of traditional plant breeding. At Stoneville, we're all about ... Perfecting the Seeds of Technology.



### STOVER EQUIPMENT CO., INC.

Stover Equipment Co., Inc. provides the cotton ginner and farmer with the most advanced form of module ginning and module handling equipment. Products offered include the "Stover Cotton Module Truck," the "Stover Chain Bed Module Feeder" and the "Stover Moving Floor Feeder," for both cotton gins and textile mills. Our website is [www.stover-equipment.com](http://www.stover-equipment.com) and email is [info@stover-equipment.com](mailto:info@stover-equipment.com).



## Terra

Be Ready with Riverside® Products

- Trific' 60DF
- Diuron 80DF
- Crop Booster®
- Crop Booster Plus®
- Invade Plus®
- Maxon®

AND RIVERSIDE & TERRA® BRAND SEEDS.



## T-Tape

T-Systems International is the world leader in the drip irrigation tape industry. T-TAPE® TSX® is made with an advanced manufacturing technology. T-TAPE® TSX®2 is the latest generation of T-TAPE and includes an improved turbulent flow track design that allows for a Coefficient of Manufacturing Variation of just 2% and a .45 Emitter Discharge Exponent.



A Crompton & Knowles Company

Uniroyal Chemical produces and markets quality crop protection products around the world for cotton producers. From planting to harvest, Uniroyal Chemical products help producers grow top quality cotton. Terraclor® and Terraclor Super X® fungicides, Comite® miticide, Dimilin® insect growth regulator, Harvade® cotton defoliant. [www.uniroyalchemical.com](http://www.uniroyalchemical.com)



United Agri Products Inc. is recognized throughout the country as a leading crop protection distributor and manufacturer of cotton pesticides as well as crop inputs. Producers have a variety of products to choose from including insecticides, herbicides, adjuvants, seeds and seed treatments. In addition to these items, UAP offers the latest in crop technology, mPower™, knowledge-based system that enhances productivity and profits.



U. S. Borax Inc. provides the cotton producer with three high quality boron products including, Solubor® for foliar application, Granubor® for bulk blended fertilizers and Fertibor® for fertilizer suspensions. Boron is an essential nutrient for all stages of cotton development, especially for pollination and fruiting.



Valent U.S.A. develops and markets crop protection and plant enhancement products. Select 2 EC herbicide, Cobra herbicide, Resource herbicide, Prism herbicide and Bolero herbicides; Orthene, Knack IGR, Danitol 2.4 EC Spray, Monitor 4 Spray, Payload 15 Granular.



Vance Publishing Corporation is the nation's leading publisher of crop vertical and dealer publications. COTTON FARMING, COTTON FARMING MANAGEMENT, THE GROWER, THE PEANUT GROWER, RICE FARMING, DEALER & APPLICATOR and CITRUS & VEGETABLE MAGAZINE provide profitable production and business management strategies to help the reader increase his bottom line. Vance also co-sponsors several trade shows and events in support of the agriculture industry.



WILBUR-ELLIS is a privately held company headquartered in San Francisco, California. The company is a large domestic distributor and formulator of agricultural products and an international trading company with offices in 42 countries around the world. Seed Protectant Products Commercial Fungicides: NuFlow® ND, Nu-Gro® Captan 4000, Nu-Gro® Color Coat Red, Nu-Gro® Color Coat Red WSP, Nu-Gro® Dyes and Nu-Gro® Color Film. Commercial Insecticides: Lorsban® 30F, Hopper Box: Nu-Coat.



Using proprietary software, XSAg.com provides a secure trading site for manufacturers, distributors and dealers to sell chemicals, seeds, parts and equipment, and other agricultural products to farmers across the nation. XSAg.com acts as a neutral market maker - bringing buyers and sellers together - and provides a seamless e-commerce fulfillment operation, including on-line freight quoting, credit facilities and transfer of funds. For information regarding the corporation, visit [www.xsinc.com](http://www.xsinc.com).

## zellweger uster

Zellweger Uster Inc. is the world's leading supplier of high-tech electronics for the textile industry, including instruments for fiber and yarn testing, on-line quality management and data systems. Recent innovations include the USTER® INTELLIGIN for on-line gin process control. This newest product helps bridge the gap between cotton producers and cotton spinning mills, facilitating more direct relationships between mills and gins. Zellweger Uster publishes USTER® STATISTICS, the world benchmark in yarn and fiber quality. As manufacturers of USTER® SPECTRUM, USTER® AFIS, USTER® QUANTUM CLEARER, USTER® FAB-RISCAN and USTER® TESTER 4, Zellweger Uster provides a high level of technical support and textile training to its customers worldwide.

## ZENECA Ag Products

With Zeneca Ag Products, you can see the difference our products make. Our cotton products include Karate Z insecticide; Gramoxone Extra, Fusion, Fusilade DX herbicides and Cyclone and Starfire harvest aids. In the US, Zeneca Inc. is a \$4.0 billion bioscience business with approximately 8,300 employees. Zeneca Inc. is a wholly-owned subsidiary of the UK-based Zeneca Group PLC (NYSE: ZEN), a major \$9.1 billion international bioscience business engaged in the research, development, manufacture and marketing of ethical (prescription) pharmaceuticals, agricultural and specialty chemical products, and the supply of healthcare services.

*\*These firms were members of The Cotton Foundation as of the end of the Foundation's 1999-2000 fiscal year, June 30, 2000. Some mergers were in the process and may have been accomplished after this booklet's production deadline.*

# SPECIAL PROJECTS 1999-2000

Special projects are funded by Foundation members over and above their regular dues. Grant amounts listed for the special projects are per-year amounts. Some projects have been funded for a specific length of time while others are ongoing.

Cotton Leadership Program

Congressional Staff Education and Orientation Program

Grown and Made in the USA Campaign

Producer Information Exchange

Cotton Physiology Education Program

Policy Education Program

Cotton Seedling Disease Survey and Education Program

Nematode Survey and Education Program

Cotton Foundation Reference Book Series

Uniform Harvest Aid Evaluation

Cotton Coalition

CCI Cotton Education Program

Cotton USA Newsletter

Worker Protection Standard Education Program

Technology Transfer Through News Media

Funding for the Future

Internet Center at the Beltwide Cotton Conferences

Beltwide Cotton Conferences Exhibitors' Center

Cotton Millennium Scholarship

High Cotton Award

## Cotton Leadership Program

### DuPont Agricultural Products Grant: \$150,000

Since 1983, 10 industry members have been selected annually to receive training aimed at developing their leadership skills. The class, chosen by an industrywide selection committee, is comprised of a producer from each of the Cotton Belt's four major production regions and one member from the other six industry segments.

During their six week-long sessions, class members discuss issues and policy with industry leaders, participate in field trips to see innovative production and processing and public and private research; receive communications training; and visit with key lawmakers and government and regulatory officials.

This experience enables class members to take on greater responsibilities in their operations and in state, regional and national interest organizations.



Members of the 1999-2000 Cotton Leadership Class from left: Chris Clegg, Dyersburg, TN; Jon Whatley, Odem, TX; Danny Brown, Pine Bluff, AR; Judson Boehmer, Greenville, SC; Diann Prechel, Phoenix, AZ; Rex Holley, Baker, FL; Ronnie Tatum, Milan, TN; Paul Bush, Arizona City, AZ; Jordan Lea, Greenville, SC; and Roy Percy, Greenville, MS.

## Congressional Staff Education and Orientation Program

### Monsanto Company Grant: \$110,000

For three years now, the National Cotton Council (NCC) has been able to provide staffers representing an increasingly urban Congress with a firsthand look at the U.S. cotton's industry's infrastructure. More than 100 staffers have now seen and heard how the industry is trying to cut costs, improve efficiencies and build demand for its food and fiber.



Allen Helms, Jr., immediate past chairman of the American Cotton Producers, answers questions from Congressional staffers about his ginning/warehouse operation.

These staffers also see research, product development, new technology adoption and promotion that are key to industry competitiveness in today's international marketplace. Interaction with cotton industry leaders is included along with visits to production, merchandising and processing operations and federal research and marketing service facilities.

## Grown and Made in the U.S.A.—It Matters

### Aventis CropScience Grant: \$100,000



Cotton Foundation President David Burns presents the Grown and Made in the U.S.A. – It Matters program's first "Cotton Champion Award" to Kathy Hoermann, president of the Painted Pony Clothing Company, in recognition of her loyal use of U.S. cotton.

The National Cotton Women's Committee (NCWC) reminds Americans to shop for products containing U.S. cotton components. Positive consumer response strengthens cotton producers' best markets and the U.S. textile manufacturing job base.

NCWC members now have an added challenge of informing consumers that their purchases of apparel assembled in the Caribbean Basin countries will help the U.S. cotton industry because those products contain U.S. cotton fiber, yarn and fabrics.

NCWC members reach consumers through such creative means as fashion shows and colorful displays in shopping malls, state fairs and other highly visible events.

## Producer Information Exchange

### FMC Corporation Grant: \$95,000



Louisiana producer Jay Hardwick, far right, talked to Western cotton producers about his operation during the 1999 Producer Information Exchange program.

More than 500 cotton producers have seized the opportunity to see valuable production techniques in regions of the Cotton Belt different from their own. Being able to meet face-to-face with their peers helps the participants, who must sort through more information and technology than ever before in their quest to produce healthy yields and quality fiber.

Participants get new ideas and perspectives in such areas as land preparation, planting, fertilization, pest control, irrigation and harvesting.

## Cotton Physiology Education Program (CPEP)

### BASF Corporation Grant: \$75,000

Increasing producers' understanding of how a cotton plant grows, including its responses to various environmental factors, is important for producers to maximize their yields and fiber quality. CPEP's 25,000 circulation newsletter, *Cotton Physiology Today*, remains the primary vehicle for distributing the information to producers. CPEP manager Dr. Anne Wrona develops detailed articles in collaboration with veteran cotton physiologists on topics ranging from planting to irrigation. To facilitate distribution and use of the newsletter's information, Dr. Wrona is directing the compilation of 12 years of newsletter issues on CD-ROM.

## Policy Education Program

### Novartis Crop Protection Grant: \$60,000

By gaining a better understanding of the NCC and its policy development and implementation process, producer participants in this program are more likely to increase their involvement in U.S. cotton's central organization.

Up to four producers from each major Cotton Belt region are chosen each year by the NCC President in consultation with NCC staff.

Their orientation includes attendance at the NCC's annual meeting and a look at the NCC's Washington, DC, operations. The 2000 producer participants also participated in a seminar about the functions of trade associations.



Producer participants in the 2000 Policy Education Program are from left to right: (front row) - David Carter, Levelland, TX; Stanley Walters, Demopolis, AL; Charles Williams, III, Crawfordsville, AR; and Bert Falkner, Aberdeen, MS; (middle row) - Bill Teeter, Tillar, AR; Sam Simmons, Harlingen, TX; John Harmon, Quitaque, TX; and Ronnie Wallace, Seminole, TX; (back row) - Steve Daley, Casa Grande, AZ; David Cochran, Greenville, MS; Bryan Wells, Colquitt, GA; and Monty Kahle, Newkirk, OK.

## Cotton Seedling Disease Survey and Education Program

### Aventis CropScience Grant: \$50,000

This project has helped cotton producers, consultants and others determine: 1) losses to the seedling disease complex, 2) the basic disease spectrum in each locale, 3) fungicide use and method of application in each state and 4) a "point system" to assist in determining when and how to use fungicides for seedling disease control. Work continues on refining the point system, allowing for use on a local basis. Standard protocol for research and trials has been adopted to ensure consistency across the Cotton Belt. This and other information and photos of the seedling disease complex are located at [www.cotton.org/cf/seedlings](http://www.cotton.org/cf/seedlings).

## Cotton Nematode Research Project

### Aventis CropScience Grant: \$50,000

Producers, consultants, Extension personnel and others are gaining useful information on detecting and controlling cotton's "hidden ene-



mies.” They also are using special Nematode Threshold Reference Cards, designed to improve decision-making on the timing and type of nematode control.

State nematologists are updating the nematode databases which contain information from annual nematode population surveys by species and county. The information can be found at [www.cotton.org/cf/nematodes](http://www.cotton.org/cf/nematodes). The web site also features periodically updated maps showing the population density of the various species.

## Cotton Foundation Reference Book Series

### Uniroyal Chemical Company Grant: \$50,000

*Uniform Harvest Aid Performance and Fiber Quality*, the fifth book to be published in the Foundation’s Cotton Reference Book Series, will offer a timeless instructional guide for economical and efficient use of defoliants and other harvest aids. The Duff Company of Kansas City is providing managing and technical editing and serving as production manager for the book, which will be available in early 2001.

A new volume on the history of boll weevil eradication in the U.S. is in advanced stages of preparation. Other reference series volumes are still available from the Foundation: *Cotton Physiology*; *Weeds of Cotton: Characterization and Control*; *Cotton Insects and Mites: Characterization and Management*; and *Vegetable Oils and Agrichemicals*.

## Uniform Harvest Aid Performance Evaluation

### Aventis CropScience, Bayer Grant: \$26,400

This project’s goal is to help producers make the proper choice of harvest aid materials and the proper application methods in order to boost the economic potential of the crop.

Standard defoliation and desiccation treatments and newer practices and/or products are being evaluated. The results will be used to develop effective, contemporary harvest aid recommendations that contribute to harvest efficiency. The results will be included in the *Uniform Harvest Aid Performance and Fiber Quality* reference book.

## Cotton Coalition

### American Cyanamid Grant: \$40,000



2000 Cotton Coalition producer members are: (front row from left) - Jimmy Rathcamp, Tivoli, TX; Steve Pretzer, Eloy, AZ; Justin Wildy, Manila, AR; and Will Grantham, Doerun, GA; (second row from left) - Mark Watte, Tulare, CA; Martin Caldwell, Altus, OK; Cecil Byrum, Windsor, VA; and George LaCour, Morganza, LA; (third row from left) - Al Fava, *COTTON GROWER* Magazine, Memphis, TN; Lexie Fennell, Springlake, TX; and Mike Alexander, Roscoe, TX.

Each year, selected producers are given training in communications and government and media relations together with background on key cotton industry issues at American Cyanamid’s research facility in Princeton, NJ.

This personal and professional development experience helps create more informed spokespersons for U.S. cotton and broadens their understanding of the business and political environment in which allied industry members are competing. Participants also get a better understanding of the Council’s role in shaping policies and regulations which affect the industry at the local, state and national levels.

## CCI Educational Program

### Dow AgroSciences Grant: \$40,000

This support enables Cotton Council International (CCI) to enhance its export promotion programs and educate foreign consumers about the advantages of buying U.S. cotton and cotton products.

The grant also helps CCI leverage funds from USDA through the Market Access Program (MAP) and from other global partners. CCI's international program efforts got an extra boost in 1999 with an additional \$1.1 million grant to its \$10.1 million base funding under the MAP.

### COTTON USA Newsletter

#### Dow AgroSciences Grant: \$25,000

The quarterly COTTON USA Newsletter updates industry members on CCI's COTTON USA worldwide programs to promote the exports of both raw and value-added cotton. Also highlighted are CCI's retail promotions, advertising campaigns and trade servicing activities. The four-color publication is distributed to more than 11,000 Council members.

The quarterly COTTON USA newsletter provides updates on Cotton Council International's global promotion activities.



## Worker Protection Standard Education Program

### Stoneville Pedigreed Seed Company Grant: \$30,000

Seasonal newsletters and information sheets containing timely information on Worker Protection Standard topics ranging from reading product labels to recordkeeping are being developed by the NCC. This project underwrites the distribution of the information to more than 10,000 producers, consultants, Extension personnel and others.

This program also receives funding from the Foundation's general fund.

## Technology Transfer Through News Media

### Monsanto Company Grant: \$15,000

A working newsroom at the Beltwide Cotton Conferences accommodates more than 70 writers and broadcasters. Their coverage of the conferences results in timely articles and broadcasts about proven and emerging technology of interest to U.S. cotton industry members. This coverage also helps put this useful information into a vast number of industry members' hands, including those who cannot attend the conferences.

Radio broadcasters and writers covering the 2000 Beltwide Cotton Conferences helped speed the delivery of timely information to industry members.



## Funding For The Future

### Vance Publications Grant: Varies

More than \$11,000 was raised for Foundation projects through a silent auction at the 2000 Beltwide Cotton Conferences. The benefit featured donated items ranging from NASCAR tickets to cotton throws.

### Beltwide Cotton Conferences Internet Center

#### Novartis Crop Protection Grant: \$7,750



The Beltwide Cotton Conferences' Internet Center enables cotton industry members the opportunity to develop their Internet navigation skills. NCC staff help answer questions about the abundance of information that can be found on the World Wide Web. This includes guidance to the NCC's home page and other helpful sites.

The Beltwide Cotton Conferences' Internet Center provides industry members an opportunity to improve their World Wide Web navigation skills.

### Beltwide Cotton Conferences Exhibitor's Center

#### Farm Progress Company Grant: \$6,000

A room with refreshments and phones is provided to exhibitors at The Cotton Foundation's Technical Exhibits at the Beltwide Cotton Conferences.

### Cotton Millennium Scholarship

#### Meister Publications Grant: \$2,500



Paige Sullivan, a Mississippi State University student, was the recipient of the first *COTTON GROWER* Millennium Grant.

Paige Sullivan, a 21-year-old agricultural economics major at Mississippi State University, was awarded the first annual *COTTON GROWER* Millennium Grant. The \$2,500 scholarship, administered through the Foundation in cooperation with the NCC, encourages and assists undergraduate students pursuing careers in agriculture.

A number of other Foundation activities are considered special projects and supported by specific member firms. For example, in the the Chemical Evaluation Project, USDA Agricultural Research Service scientists at the Southern Insect Management Laboratory in Stoneville, MS, are analyzing insecticides and application methods with the goal of helping producers lower their insect control costs.

Other special project efforts include the Technical Education Exhibits at the Beltwide Cotton Conferences, the Ginning Lab Fiber Analysis and the periodic development and distribution of various NCC-produced video tapes.

## Harry S. Baker Distinguished Service Award For Cotton

Senator Thad Cochran (R-MS), who was instrumental in guiding a critical agricultural emergency relief package through Congress in 1999, was honored as the recipient of the 2000 Harry S. Baker Distinguished Service Award for Cotton.

Senator Cochran's extensive legislative record includes the writing of key provisions of the farm bills of 1985, 1990 and 1996. The marketing loan program for cotton and rice, which he authored and guided to passage in 1985, is considered one of the most successful agriculture programs ever enacted — one that ultimately was adopted by all the major commodities.

The award, named after the late California industry leader and National Cotton Council (NCC) president Harry S. Baker, is presented annually to a U.S. cotton industry member who has provided extraordinary service, leadership and dedication to the industry. Cochran received the award during the NCC's 2000 annual meeting.



Senator Thad Cochran (R-MS) accepts the 2000 Harry S. Baker Distinguished Service Award loving cup from 1999 NCC President Ron Rayner.

## Oscar Johnston Lifetime Achievement Award

The late William Rhea Blake, who served as a NCC executive vice president in the organization's early years, received the 2000 Oscar Johnston Lifetime Achievement Award.

In 1938, NCC founders selected Blake, who has been described as "skillful, forthright, incredibly ingenious at selling a point of view, inspirational and persistence personified, to head up the staff of a novel concept in organizational structure — the National Cotton Council. Blake cemented relationships among the five, and eventually seven, cotton segments, believing that they could work together."

The annual achievement award, established in 1997, is named for Oscar Johnston, whose vision, genius and tireless efforts were foremost in the organization and shaping of the NCC more than 60 years ago.

The award is presented to an individual, now deceased, who served the cotton industry, through the NCC, over a significant period of his or her active business career. Recognizing more than office or position held, the award honors someone who, like Johnston, exerted a positive influence on the industry and who demonstrated character and integrity as well as perseverance and maturation during that service.



The late William Rhea Blake, who served as Executive Vice President for the NCC in its early years, was the recipient of the 2000 Oscar Johnston Achievement Award.

## High Cotton Awards

### Farm Press Publications Grant: \$15,000



Mike Gonitzke, publisher of the Farm Press Publications, far left, joins High Cotton Award winners from left: - Steve Sossaman, Queen Creek, AZ; Charles M. Noble, III, Rayville, LA; John Barrett, Edroy, TX; and Tom Ingram, Marvyn, AL.

Four cotton producers with a love for the land and for the environment were named recipients of The Cotton Foundation/Farm Press Publications High Cotton awards. Winners of the regional awards for 1999 were: Tom Ingram, Marvyn, AL; Charles M. Noble III, Rayville, LA; John Barrett, Edroy, TX; and Steve Sossaman, Queen Creek, AZ.

This awards program was begun in 1994 to recognize the contributions of farmers to preserving and protecting the environment. Recipients are selected by a special judging panel comprised of representatives from industry, government and conservation agencies.

## Robert and Lois Coker Trustees Chair in Molecular Genetics

### Endowment: \$1,000,000

This endowment supplements support provided by Clemson University's Division of Agriculture and Natural Resources for molecular genetics research.

Dr. R.A. Wing, a plant geneticist, is serving in the "Trustees Chair" at Clemson University. The chair was established in recognition of the late Dr. Robert R. Coker, noted South Carolina field crop seed breeder and cotton producer, and his wife, Lois. Dr. Wing has established the Clemson Genome Institute which is devoted to the discovery and implementation of novel genes from crop plants, including cotton. The current focus is on improving boll retention in order to increase yield and to improve fiber quality.

Dr. Wing hopes to use the Coker Endowment and a \$2 million grant from the National Science Foundation as leverage to get more federal and private sector support to make the Genome Institute one of the finest in the nation for agricultural genomics research. Future work may include a molecular approach to cleaning up the environment.

## C. Everette Salyer Cotton Research Fellowship

### Endowment: \$300,000

This fellowship was inaugurated to honor the late California producer-ginner and former Cotton Foundation president, C. Everette Salyer. Students at the doctorate or post-doctorate level are able to study and conduct research geared toward the sciences of producing and marketing cotton.

Ms. Evelyn Steglich is pursuing a Master of Science in Agriculture and Life Sciences at Texas A&M University. She is conducting research into morphology and phenology changes that occur in cotton when grown in ultra-narrow-row production. Her plans are to pursue a Ph.D.

Jarrad Prasifka is a Master of Science student in A&M's Entomology Department. His research interests lie in biological control programs based on sound ecological principles yet practical for commercial use. He hopes to develop programs that can help control boll weevil and other pest infestations.

### **Cottonseed Oil Clinic**

**Endowment: \$60,000**

Proceeds from a Mississippi Valley Oilseed Processors Association endowment support the Annual Conference of the Oilseed Processing Clinic. The clinic is jointly sponsored with the USDA Agricultural Research Service's Southern Regional Research Center and the National Cottonseed Products Association.

### **George A. Slater Memorial Scholarship Fund**

**Endowment: \$18,550**

A scholarship fund at Texas A&M University - Kingsville supports a student in a cotton-focused discipline. The fund was created from memorial scholarship funds commemorating the service of the late Foundation executive director, George Slater.

# The Cotton Foundation

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