COTTON FOUNDATION 2007-2008

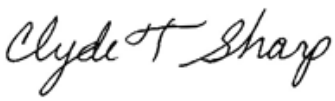
CHAIRMAN'S MESSAGE

By encouraging, facilitating and conducting cotton research and education, The Cotton Foundation is helping the National Cotton Council carry out its mission of providing U.S. cotton industry members a world marketplace advantage. Cotton Foundation membership remains solid with 68 members as of July 1, 2007, the beginning of the 2007-08 Foundation fiscal year. These member firms' dues ($379,746) are going entirely in support of 25 general research and education projects approved by the Foundation's Research Screening Committee. Investments and Washington building rental income also provided a small portion of the funding for these projects. In addition, five other general projects are being funded from 2006-07 contingency funds and miscellaneous contributions ($54,800).

These projects are addressing needs that range from managing pests such as reniform nematodes, pink bollworm and tarnished plant bugs to finding ways to improve and preserve fiber quality. The U.S. cotton industry is enjoying a healthy return on investment from these efforts, too. NCC staff estimates that taking into account cash and in-kind services, the Foundation's general projects enjoy a return of about $3 for every dollar devoted to these projects. As a need arises, Foundation members have shown their eagerness to support initiatives above and beyond those covered by dues. These special projects fill important niches, especially in the education/information dissemination arena. Among those are the Cotton Leadership Program – the longest running special project and celebrating its 25th year with the selection of the 2007-08 class.

Enthusiastic funding also was demonstrated for new special projects during 2006-07. That included the multiple-sponsor support of the Internet-accessible weed resistance learning module and the Multi-Commodity Education Program. That program is providing current and emerging producer leaders with: 1) a better understanding of production issues/concerns faced by their peers in another geographic region; and 2) first hand observation of the agronomic practices, technology utilization, cropping patterns, marketing plans and operational structure in that region. In addition, individual Foundation member firms continue to sponsor vital NCC communications vehicles, including the *Cotton's Week* newsletter, AgDay Cotton's Week and the Cotton eNews electronic newsletter.

During the past year, Dr. Bill Norman, former vice president of Ginner Services for the National Cotton Council, took the helm as Cotton Foundation executive director and vice president of the Council's Technical Services department. He succeeded Dr. Andy Jordan, who along with other retired Council technical services personnel and current Council technical services staffers, are providing valuable oversight on specific Foundation projects and goals. Looking ahead, I believe the Foundation is well positioned to foment innovative cotton research, find solutions to cotton problems and forward cost-cutting technology and information throughout cotton's production and marketing chain.



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The Cotton Foundation

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PROJECT SUPPORT

AGRONOMY

Yield Risk Assessment and Support for the Inclusion of Cotton as a Limited Water Use Alternative to Corn Over the Ogallala Aquifer

Concerns regarding future water availability in the Ogallala Aquifer in western Kansas, Oklahoma and Texas have producers inquiring about alternative crops if corn is no longer feasible. Cotton is an economically viable alternative for producers who have traditionally grown irrigated corn.

Kansas State University scientists received funding to investigate the impact of introducing cotton into this region that is dominated by continuous irrigated corn. This new project will supplement a USDA-funded effort at collecting cotton growth and development data as well as conducting cotton variety performance trials in the region. Proposed studies include those focused on: the impact of irregular (skippy) stands, Bt and non-Bt variety comparisons, variety performance, weed control in Roundup-Ready, Roundup-Ready Flex and Liberty tolerant varieties, and spray drift. This research will help address Kansas cotton production questions and help producers improve crop management, yields and profitability.

Kansas State University researchers are collecting cotton growth and development data, including from these irrigated plots near Cullison.

FIBER & SEED QUALITY

Modern Reference Method for Moisture in Cotton

The amount of moisture present affects the mass and hence the market value of cotton. Knowledge of the actual moisture content is an important financial consideration and can help the National Cotton Council carry out its mission of providing the U.S. cotton industry a world marketplace advantage.

Research at USDA's Southern Regional Research Center is aimed at developing a rapid, reliable and modern reference method for moisture in cotton with up-to-date precision and bias data. Specifically, this request calls for a reference method to measure moisture content of samples conditioned to moisture-equilibrium in the standard atmosphere.

Determination of the Variability of Fatty Acid Composition in Cottonseed

Although cottonseed oil historically has been preferred by the snack food industry for frying, recent developments in other oilseed crops have eroded this position. Specifically, breeding efforts have modified the distribution of fatty acids of sunflower oil to improve its frying properties, and some venders have chosen to replace cottonseed oil with this "new" sunflower oil. For cottonseed oil to continue to compete for its traditional markets, it also must be developed with specific end uses in mind.

In this new project, scientists at the USDA's Southern Regional Research Center in collaboration with scientists from the Jamie Whitten Delta States Research Center in Stoneville, MS, will seek to: 1) determine the influence of growing environment on the fatty acid distribution of cottonseed, 2) determine the distribution of fatty acids in currently grown U.S. cottonseed varieties and 3) determine the variability in fatty acid distribution that exists within the National Cotton Germplasm Collection.

Historically, cottonseed oil has been preferred by the snack food industry for frying.

Increasing Cottonseed Utilization by Manipulating of the (+)- and (-)-Gossypol Ratio

Value-added applications for cottonseed are needed but the presence of gossypol in cottonseed limits the utilization of the seed and meal. Recent studies (work supported partially by The Cotton Foundation at the Southern Regional Research Center in 2006) suggest that (+)-gossypol is less problematic in animal feeds than (-)-gossypol. Consequently, cotton plants with only the (+) enantiomer in the seed would be more widely utilized, and thus demand a more favorable price than traditional cottonseed.

Scientists also recently showed that both the (+)- and (-)-enantiomers of gossypol have similar activity against the generalist insect herbivore Helicoverpa zea. They do not know, however, how the enantiomers will affect specialist insect herbivores. This knowledge gap should be filled before extensive field experiments are conducted.

Work in 2007 by researchers at the USDA Southern Plains Agricultural Research Center will be aimed at: 1) completing analysis for (+)- and (-)-gossypol in the remaining accessions in the G. barbadense National Germplasm Collection, 2) completing gossypol feeding experiment with Helicoverpa virescens (tobacco budworm) and analyzing data, 3) conducting field evaluations of selected germplasm that exhibit 95% (+)-gossypol in the seed and 4) collecting sufficient seed from greenhouse grown plants that exhibit 95 percent (+)-gossypol seed – to allow for a germplasm release.

Opportunities to Utilize Cottonseed in Cattle Development Programs

New pelleted cottonseed products appear to have a reduced gossypol content which provides an alternative use for cottonseed products in weaning and development rations that can increase both protein and energy content simultaneously. Scientists at the Mississippi Agriculture and Forestry Experiment Station are assessing the feasibility of feeding a pelleted cottonseed product during the weaning and post-weaning phases as a component of beef bull development rations, which could result in an added market and utilization of cottonseed.

The specific objectives are examining the inclusion of a pelleted cottonseed product (FuzzPellet) in a post-weaning ration for young growing beef bulls to enhance growth performance. It is anticipated that this study will establish guidelines and provide performance data from which the use of pelleted cottonseed may be used in beef bull development programs.

Characterization of Vapor Movement through Cotton Bales at Various Densities*

Optimum moisture levels in cotton lint are important factors for efficient gin processing and quality preservation but investigations thus far generally have been limited to the assumption that the bale moisture was evenly distributed within bales. The project's purpose is to develop a more basic understanding of the relationships among fiber bulk density, vapor pressure relationships and bagging permeance. Texas A&M researchers are collaborating with those at the USDA-ARS Ginning Laboratory in Stoneville, MS, to develop mathematical model(s) to predict moisture change at any location within cotton bales. With the ultimate objective of producing a numerical model of moisture transfer, it is expected that such models will lead to more efficient research in the future and a more rapid development of practical interventions where problems may indeed exist.

*Funded with 2006-07 contingency.

Support for International Commercial Cotton Testing Methods (ICCTM) Web Site*

This project will ensure the proceedings of the International Textile Manufacturers Federation (ITMF) technical working groups will be accessible through the International Commercial Cotton Testing Methods web site with links to sponsors' home pages. The proceedings are available on CD as well. The Foundation and Cotton Incorporated have supported the proceedings publication in the past. Other confirmed supporters are: 1) Rieter/Winterthur/Switzerland 2) Uster Technologies/Knoxville/USA and 3) Premier Evolvics/Coimbatore/India.

For the past 30 years, these technical working groups -- length, dust and trash, maturity and fineness and HVI -- have reviewed and facilitated advances in fiber measurement technology. The groups have established reference standards where none existed and formed collaborations to resolve testing challenges.

*Funded with 2006-07 contingency.

ENGINEERING

Maintaining Cotton Lint & Seed Quality During Module Building & Storage

Recent production seasons have resulted in record numbers of modules built and bales ginned at fewer gin locations in Texas. As a consequence, average module storage time has increased, the ginning season has been extended and the risk of seed cotton experiencing rainfall and wind events has increased. Moreover, transport of modules and drying systems in the gin have become costly with the rise in fuel prices.

Through research, investigators already have quantified lint monetary losses due to using worn tarps and building poorly shaped modules. An informational brochure and poster were developed and distributed to all Texas gins and others through the Texas Cotton Ginners Association, Cotton Incorporated and USDA-ARS. The focus was to inform cotton producers and cotton ginners about the importance of constructing proper seed cotton modules and protecting the modules with a good quality tarp that does not leak.

During the 2007-08 season, investigators will seek to decrease costs associated with post production handling, storage and ginning of seed cotton through development of tools and systems that will maintain cotton lint and seed quality during module building, transport and extended storage periods. Module cover performance will continue with the examination of wind damage using a wind tunnel. As building a better module is important -- a prototype of the shape feedback system will be shared with a manufacturer. Cooperation with the manufacturer and adoption is possible in 2008. Knowledge gained in this project will be used to support the development of a performance standard for cotton module covers.

Module cover quality is checked by pulling module cover samples across a light box with back lighting beneath a digital color camera. Texas A&M University scientists hope to develop a full scale system suitable for real-time assessment of intact covers under gin conditions.

Engineering Systems – Seed Cotton Handling and Ginning

The overall goal of this research effort is to reduce seed cotton transportation costs; a secondary goal is to minimize seed cotton storage costs while processing five to seven million bales with 200 or fewer gins.

During 2007, researchers at Texas A&M University are formulating practical scenarios for cotton handling, storage and ginning in an extended ginning season. They also are formulating feasible seed cotton transport systems from the field (turn-row) to storage area that could be implemented at a Texas location with the gin service area expanded from existing radii to as much as 100 miles.

It is envisioned that a new seed cotton handling, storage, and ginning system with significantly longer seed cotton storage periods and gin seasons may include a process whereby producers would receive an advance partial payment based on some evaluation of the module and a final payment when the lint and seed is sold. Conceptually, ownership could be transferred from the producer to third parties, mills and/or gin management at the time the module is delivered to the gin.

Texas A&M University researchers test a module shape feedback system that could help harvest crews in determining where to move cotton along the length of the module to create a shape that will shed water. The crew noted that the system particularly helped in low-light situations and when the tramper was at the far end of the module builder.

Engineering Systems – Seed Cotton Handling and Ginning

It has been estimated that an extended ginning season (six to nine months) could be a remedy for the steady decline in the number of U.S. gins. Such a system also could result in significant ginning cost reductions.

This project is formulating: 1) practical scenarios for cotton handling, storage and ginning in an extended season and 2) feasible transport systems where the gin service area is expanded to as much as a 100 mile radius.

Researchers at Texas A&M will be able to use data previously gained in this project, including ginning cost surveys and mapping of major and lesser roads and a layout of all possible transport routes, including limiting capacity of the interstate highways for transport of cotton modules.

Gasification of Cotton Gin-Byproducts for Heat and Power Generation

The combination of escalating fuel and energy prices and an increase in gin trash due to bumper crops has given this project urgency.TexasA&MUniversity engineers' primary goal for this project in 2006 is to demonstrate the technical and economic feasibility of using cotton gin trash to generate heat and power in cotton gins.

In 2005, pelleted cotton gin trash, supplied by the USDA Cotton Ginning Lab in Lubbock, was tested in a pre-commercial downdraft gasification unit. Engineers also evaluated the feasibility of installing a unit in a cotton gin and completed design of a modular downdraft gasification system.

A Science-Based Emission Factor for 6-Row Cotton Pickers

The federal air quality standards will bring new challenges to U.S. cotton producers who may be faced with: 1) air quality permit application fees, 2) fines for violations of air quality permits and 3) costs associated with implementing practices or systems to reduce emissions from agricultural field operations.

In this new project, Texas A&M University engineers are developing a science-based emission factor PM10, PM2.5 and PM10-2.5 emissions from picker type cotton harvesting machines. Initial work will involve: 1) quantifying the PM emission factor from cotton harvesting operations and the difference in emissions between a two row versus a six row cotton picker; 2) developing a protocol for measuring source emission rates of PM from the six row harvester; 3) characterizing the particle size distribution of the PM emitted from cotton harvesting; and 4) determining which is more appropriate – reporting cotton harvesting emission factors on a mass of PM emitted per unit area or per bale of harvested cotton.

INFORMATION/EDUCATION

Electronic Publication of the *Journal of Cotton Science*

Now in its 11th year, the quarterly, on-line *Journal of Cotton Science* (JCS) has evolved into an important communications tool for the cotton scientific community – helping to keep the U.S. cotton industry competitive through ready access to multi-disciplinary research in areas ranging from agronomy to textile technology.

JCS, available at http://journal.cotton.org, encourages development of science and technology and makes peer reviewed journal articles readily accessible to the cotton research community and industry through electronic publication.

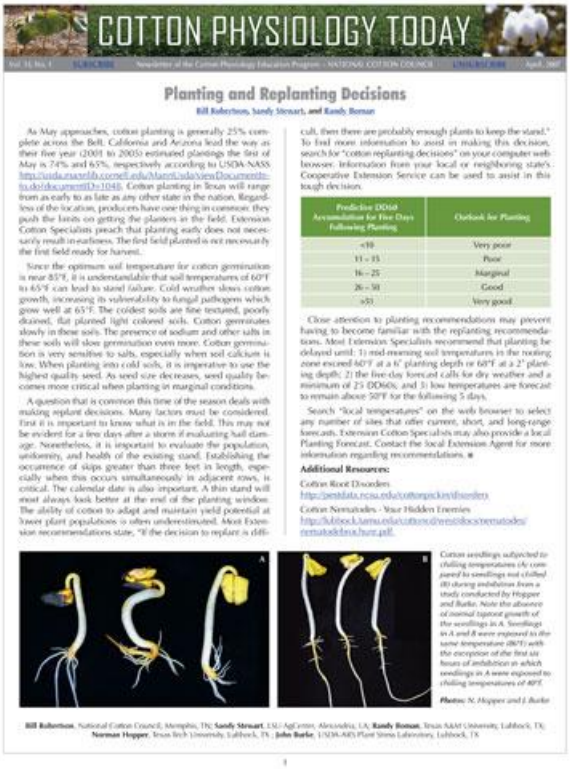
JCS manuscripts contain an abstract that explains the research's value in layman's terms. Published as Adobe Acrobat (PDF) files for optimum versatility and access ease, JCS, which is copyrighted, was the first all-electronic journal to be indexed in AGRICOLA, the database of the National Agricultural Library. Patrick D. Colyer, Louisiana State University, serves as editor-in-chief.

***Journal of Cotton Science* (JCS) has evolved into an important communications tool for the cotton scientific community.**

Enhancing Information Transfer in Cotton Production

This project has allowed the revival of *Cotton Physiology Today*, a newsletter published from 1989 to 2001 as part of the National Cotton Council's Cotton Physiology Education Program. Considerable changes have occurred in the information delivery system available to the decision makers at the farm level since the last issue was produced. At present, newsletters published from 1996-2001 are available to members online.

The monthly newsletter, which is distributed electronically and posted on the NCC's web site, is enhancing cotton educational programs currently in place by Extension cotton specialists. In addition, links are included to previous newsletters and to related articles in the *Journal of Cotton Science* and Beltwide Cotton Conferences' *Proceedings*.



COTTON PHYSIOLOGY TODAY

Planting and Replanting Decisions

Bill Robertson, Sandy Stewart, and Randy Boman

As May approaches, cotton planting is generally 25% complete across the Belt. California and Arizona lead the way as their five year (2001 to 2005) estimated plantings the first of May is 74% and 65%, respectively according to USDA-NASS. http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1048. Cotton planting in Texas will range from as early to as late as any other state in the nation. Regardless of the location, producers have one thing in common: they push the limits on getting the planters in the field. Extension Cotton Specialists preach that planting early does not necessarily result in earliness. The first field planted is not necessarily the first field ready for harvest.

Since the optimum soil temperature for cotton germination is near 85°F, it is understandable that soil temperatures of 60°F to 65°F can lead to stand failure. Cold weather slows cotton growth, increasing its vulnerability to fungal pathogens which grow well at 65°F. The coldest soils are fine textured, poorly drained, flat planted light colored soils. Cotton germinates slowly in these soils. The presence of sodium and other salts in these soils will slow germination even more. Cotton germination is very sensitive to salts, especially when soil calcium is low. When planting into cold soils, it is imperative to use the highest quality seed. As seed size decreases, seed quality becomes more critical when planting in marginal conditions.

A question that is common this time of the season deals with making replant decisions. Many factors must be considered. First it is important to know what is in the field. This may not be evident for a few days after a storm if evaluating hail damage. Nonetheless, it is important to evaluate the population, uniformity, and health of the existing stand. Establishing the occurrence of skips greater than three feet in length, especially when this occurs simultaneously in adjacent rows, is critical. The calendar date is also important. A thin stand will most always look better at the end of the planting window. The ability of cotton to adapt and maintain yield potential at lower plant populations is often underestimated. Most Extension recommendations state, "If the decision to replant is difficult, then there are probably enough plants to keep the stand." To find more information to assist in making this decision, search for "cotton replanting decisions" on your computer web browser. Information from your local or neighboring state's Cooperative Extension Service can be used to assist in this tough decision.

Predictive DD60 Accumulation for Five Days Following Planting	Outlook for Planting
<10	Very poor
11 – 15	Poor
16 – 25	Marginal
26 – 50	Good
>51	Very good

Close attention to planting recommendations may prevent having to become familiar with the replanting recommendations. Most Extension Specialists recommend that planting be delayed until: 1) mid-morning soil temperatures in the rooting zone exceed 60°F at a 6" planting depth or 68°F at a 2" planting depth; 2) the five-day forecast calls for dry weather and a minimum of 25 DD60s; and 3) low temperatures are forecast to remain above 50°F for the following 5 days.

Search "local temperatures" on the web browser to select any number of sites that offer current, short, and long-range forecasts. Extension Cotton Specialists may also provide a local Planting Forecast. Contact the local Extension Agent for more information regarding recommendations. ■

Additional Resources:

Cotton Root Disorders
http://pestdata.ncsu.edu/cottonpicker/disorders

Cotton Nematodes - Your Hidden Enemies
http://lubbock.tamu.edu/cotton/pest/docs/nematodes/nematodebrochure.pdf

Cotton seedlings subjected to chilling temperatures (A) compared to seedlings not chilled (B) during imbibition from a study conducted by Hopper and Burke. Note the absence of normal taproot growth of the seedlings in A. Seedlings in A and B were exposed to the same temperature (86°F) with the exception of the first six hours of imbibition in which seedlings in A were exposed to chilling temperatures of 40°F.

Photos: N. Hopper and J. Burke

Bill Robertson, National Cotton Council, Memphis, TN; Sandy Stewart, LSU AgCenter, Alexandria, LA; Randy Boman, Texas A&M University, Lubbock, TX; Norman Hopper, Texas Tech University, Lubbock, TX; John Burke, USDA-ARS Plant Stress Laboratory, Lubbock, TX

The *Cotton Physiology Today* newsletter has been restored.

Cottonseed Focus Group Research Priorities Meeting

The cottonseed segment has begun to address many new research issues as they integrate the whole seed merchants into the segment. Some of these include nutrition, gossypol and other issues affecting crushers.

This project will enable the NCC to coordinate and conduct a meeting with scientists at USDA's Southern Regional Research Center and Texas A&M University to: 1) determine the status of important cottonseed-related research efforts, including those that need to be continued or discontinued and 2) identify emerging issues that could provide for research priorities in the future.

NEW PRODUCTS

Cotton Genetic/Variety Influence on the Comfort of Cotton Fabrics

This ongoing project's goal is to identify and relate specific genetic make-up in cotton that can provide better final comfort for cotton wearers. This would strengthen cotton's position against synthetics and result in greater cotton consumption. Investigation in 2006 by Texas Tech University researchers revealed that one of the basic sugars in cotton "verbascose" has influence on the important cotton property of "comfort." This result has opened up new opportunities for the development of value added and functional cottons. A paper on the study will be presented in Fall 2007 at the American Association of Textile Chemists and Colorists' Annual Technical Conference. The scientists current objectives are to: 1) establish the superiority of cotton against competing synthetic fibers by comparing its breathablity (Moisture Vapor Transport) and benchmarking against activewear and high performance synthetics; 2) compare and quantify the breathability of different U.S. cotton varieties planted and 3) obtain for the first time an understanding regarding the influence of cotton chemistry (basic sugars) on the most important property of cotton - its comfort.

Cotton nonwovens form an important layer in the antiballistic chest shield.

Green Cotton Composites for Automobile Applications

In April 2007, the U.S. Supreme Court issued a landmark ruling calling for the U.S. Administration to regulate greenhouse gas emissions. With an urgent need to develop lightweight composites from biodegradable and renewable sources that can be used in aircraft and automobiles, more research is needed and awareness raised in developing cotton-based nonwovens and composites, which have industrial applications. Objectives of this project, a collaborative effort between Texas Tech University and the University of Tennessee, are to: 1) manufacture composites using cotton, 2) effectively utilize needle-punching and thermal-bonding technologies to develop different composites that find use in semi-structural and industrial applications, 3) determine the best combinations of materials and processing conditions to produce good quality cotton composites, 4) evaluate the cotton composites for their critical performance related properties, 5) promote cotton-based composites by presenting research results and providing samples to prospective customers/industries and 6) explore new areas of application for cotton and other natural fibers. The ultimate goal will be to create new sales opportunities for regular and lower quality cotton (since bleaching is not required and shorter fibers can be used in many composite products). For example, about 40 automotive components such as door panels, package trays, etc. can be developed using the cotton composites.

PEST/DISEASE MANGEMENT

Developing Dynamic Action Levels During Flowering for Control of Tarnished Plant Bug in Cotton With Insecticides

Scientists out of the Louisiana State University AgCenter continue to relate squares (flower bud) injury to cotton yield losses during discrete flowering periods. Current and new classes of insecticides will be evaluated for their effectiveness using square injury and insect density. Tarnished plant bug populations will be temporally manipulated with selected insecticides and alternate host availability.

During 2006 two studies collected information that will be used to improve sampling methods and action levels (thresholds) for triggering insecticide applications against tarnished plant bug. The study suggests that squares should be examined on fruiting branches located between plant main stem nodes four and seven from the plant terminal.

Another series of studies performed for the second year found tarnished plant bug nymphs consistently preferred squares above other reproductive structures during the flowering and boll maturation stages of plant development. The influence of selected spray nozzle and liquid delivery pressures on insecticide efficacy also were evaluated in field tests. At normal application volumes of 5-15 GPA, insecticide efficacy levels against cotton insect pests were lower for air induction nozzles compared to that for hollow cone nozzles used at pressures of 25-60 PSI.

These results will support the efforts of the Mid-South entomologists in establishing effective triggers for tarnished plant bug management with new insecticide chemistries.

Using a shake sheet, the number of tarnished plant bugs is recorded – data that is compared to the number of tarnished plant bug injured squares with overall goal of validating the use of square injury as a sample tool and for treatment determination.

Managing Glyphosate-Resistant Palmer Amaranth in Cotton

In 2006, University of Georgia researchers conducted 18 studies on more than 100 acres of land addressing

glyphosate-resistant Palmer *amaranth* in cotton. They learned one glyphosate-resistant Palmer *amaranth* per 20 row feet of cotton can reduce cotton yield seven percent; found that glyphosate-resistance can be transferred through pollen movement for at least 200 meters; and confirmed glyphosate-resistance being present in 52 Georgia fields. Two fairly effective herbicide systems were developed to manage this pest and were recommended to growers in 30-plus Extension meetings in Georgia.

The scientists will repeat their studies in 2007 to confirm their information with the aim of meeting the following objectives: 1) developing weed management programs for managing glyphosate-resistant Palmer *amaranth* in conventional and conservation tillage cotton, 2) determining the exact locations of glyphosate-resistant Palmer *amaranth* biotypes in Georgia, 3) determining the time line/distance that resistance will spread through pollen movement and 4) quantifying the competitiveness of glyphosate-resistant Palmer *amaranth* in cotton in order to help define the cost-benefit relationships with glyphosate-alternative management systems.

Glyphosate-sensitive and -resistant Palmer amaranth after being treated with glyphosate.

Glyphosate-Resistant Palmer Amaranth Screen in Arkansas and Tennessee

University of Tennessee and University of Arkansas scientists are identifying new glyphosate-resistant Palmer *amaranth* biotypes in their respective states so they can implement management plans before these weed populations become widespread. During the 2007 growing season, the scientists are working with farmers and county extension agents who have identified Palmer pigweed they feel is glyphosate-resistant and examining random Palmer populations in cotton for their overall sensitivity level to glyphosate. After the season, they will screen suspect glyphosate-resistant Palmer pigweed in the greenhouse to estimate the overall glyphosate sensitivity of the suspected resistant population to a "normal" Palmer population. The majority of the greenhouse work will be conducted in the fall and winter. Growers with confirmed resistant Palmer pigweed populations will be provided recommendations on controlling this weed. This information will be provided to the growers via FACT sheets, grower meetings and one-on-one consultation.

Spider Mite Management: Identification of Wild Hosts and Their Role in Seasonal Population Growth of the Spider Mites

In 2005 and 2006 the number of cotton acres treated for mites in Mississippi increased by 2.5- 4-fold above historic levels. Other southern states also experienced increases in mite densities, well above those seen in previous years. It is probable that spider mite management will continue to be a frequent cost of cotton production in southern states so effective management of the pest will be very valuable.

Because spider mite outbreaks often begin near field borders, it is likely that colonizing mites originate from weeds near field perimeters. If specific weeds are identified as major reproductive hosts, it may be possible to delay or reduce seasonal population growth by eliminating those weeds from field perimeters.

In this new project, a Mississippi State University doctoral student is determining which weeds are major hosts of spider mites in the Mississippi Delta and how they contribute to seasonal population increases of spider mites. This research will be conducted over multiple years and will address several issues in mite management. Initially, a comprehensive host list will be developed and determinations made on how these plants contribute to spider mite population increases in cotton over the season.

In 2005 and 2006 the number of cotton acres treated for mites in Mississippi increased by 2.5- 4-fold above historic levels.

Monitoring Susceptibility of Southwestern Pink Bollworm to Bt Toxins Cry1Ac and Cry2Ab2

A program to eradicate pink bollworm from the Southwest is based foremost on high levels of use of Bt cotton. It also utilizes the complementary technologies of pheromone-based mating disruption, releases of sterile pink bollworms and limited use of conventional insecticides. It is particularly critical at this time that the susceptibility of pink bollworm to Bt toxins be documented both in and out of the eradication zones.

In this project, University of Arizona researchers will coordinate an effort to collect pink bollworm larvae from cotton fields throughout Arizona (12-16 locations) and the Imperial Valley, in three locations of California's Palo Verde Valley, as well as up to two sites at which larvae are detected in each of the New Mexico and the Trans-Pecos eradication zones. Cultures will be reared in the laboratory to produce adequate numbers of pink bollworm larvae for conducting bioassays, and then susceptibility to Cry1Ac and Cry2Ab2 using diet incorporation bioassays will be estimated.

It is particularly critical at this time that the susceptibility of pink bollworm to Bt toxins be documented both in and out of the eradication zones.

Pink Bollworm Eradication Technical Support, Systems Development, Program Evaluation and Onsite Support*

This project is providing much-needed technical support for the Pink Bollworm Eradication Program as an offset to the loss of USDA positions that covered management, rearing, field support and technical development. Support in 2007-08 includes program review and evaluation to ensure that sterile moths are used as effectively as possible. Scientists also are provided with direct program interaction time in Texas, New Mexico, Arizona, California and Mexico. Areas of focus include technical assistance in sterile insect release rates and distribution; pheromone use and timing; use of sterile insects as refugia; development of any new resistance management studies as needed or required by EPA in cooperation with the University of Arizona; and a complete review of all published and unpublished data on sterilization dosages. Important data on dosages is unpublished and will be compiled for review of a possible dose reduction recommendation by the NCC's Pink Bollworm Technical Committee.

*Funded with 2006-07 contingency.

PRECISION AGRICULTURE

Use of Hyperspectral Imagery and Soil Electrical Conductivity for Site-Specific Reniform Nematode Evaluations and Economical Management

The reniform nematode has become an economically serious pest to cotton production in the southeastern United States. To implement a successful reniform management program, producers must first identify that the nematode is present in a field and determine populations present in each location. In Mississippi, remotely sensed hyperspectral imagery has been correlated with reniform nematode population levels to obtain an accurate estimation of the infield nematode distribution without taking a soil sample. Alabama is working with the Greenseeker technology.

This proposed project will be conducted cooperatively in Alabama, Louisiana and Mississippi. Merging technologies can provide information for maximizing reniform management options and preserving cotton yields. Resulting data will be applicable to other regions where the reniform is becoming a problem.

ENVIRONMENT/SAFETY

Information and Research on Potential Consumer, Environmental and Workplace Risks

This ongoing project helps in the development of technical data needed in the formation of codes, regulations and rules affecting U.S. cotton industry operations and products. Some of the key areas where data has been helpful include: 1) addressing potential regulations on PM and ozone emissions from cotton production and gins, hexane toxicity, and dioxin; 2) assistance in getting EPA to regulate vegetable oil differently than petroleum oil in spill regulations and getting reasonable modifications to oil spill prevention regulations for agriculture; 3) studying the economic impact of potential furniture flammability standards on cotton textiles and precision and bias evaluation of flammability bedding test methods; 4) to develop data about workplace health risks; and 5) to assist in getting cottonseed oil and meal exempt from reporting under the amended Inventory Update Rule.

Test data were obtained that are important to flammability standards being developed for bedclothes and upholstered furniture. Burn incidence data from CPSC in-depth studies are continually updated and have been used to help retain the amendments (beneficial to cotton) to the Children's Sleepwear Flammability Standard and prevent other unnecessary new standards for general apparel. Amendments were obtained to the general provisions for emission standards for Vegetable Oil Extraction -- specific language for alternate extraction solvents as an alternate compliance method, pollution prevention and to SSM.

Current year objectives will focus on: 1) developing and evaluating research information on PM, ozone and other air emissions from cotton operations; 2) developing improved flammability treatments and test/economic data for cotton products and flammability information/education programs; 3) evaluating workplace health and safety risks related to cotton; 4) evaluating toxicity of chemicals used on cotton textiles, potential residues on cotton, and chemicals used in other cotton processes; and 5) updating the ITT burn database with new Consumer Product Safety Commission in-depth studies.

Sustainable Practices for Production Agriculture*

There is concern among retailers that a growing number of influential consumers believe agricultural practices are harmful to the environment. There also is evidence that misinformation among consumers can create a serious threat to marketing U.S. commodities, including cotton.

The National Cotton Council and Cotton Incorporated agriculture staffs recently have quantified the environmental, sustainable and social benefits of many practices used in cotton production; however, data gaps exist for cotton and agriculture in general.

This project's objective is to develop an agricultural/industry program of activities, focusing on environmental stewardship and leadership, which will help communicate agriculture's positive environmental image. The NCC staff also will be able to continue participating in a coalition of other commodity groups, international trading companies, conservation and wildlife advocacy groups and select retailers. That working group includes the American Soybean Association, the National Corn Growers Association, Monsanto, Pioneer, Cargill, Bunge, Mars, McDonalds (invited), the World Wildlife Fund, Conservation International and Nature Conservancy.

*Funded with 2006-07 contingency.

SPECIAL PROJECTS

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.

Producer Information Exchange (P.I.E.)

Bayer CropScience Grant: $125,000

Nearly 800 producers from across the Cotton Belt have benefited from this program – one that encourages its participants to maximize production efficiency and speed the adoption of proven technology and farming practices. During four tours in 2007, cotton producers from the western region traveled to the southwestern Region while producers in the southwestern region traveled to the western Region. Likewise, producers in the Mid-South traveled to the Southeast while the producers from the Southeast traveled to the Mid-South.Upon arrival at the specified region, producers engage in face-to-face interaction with their peers and observe production techniques and technology in regions different from their own. Participants also are able to share information with each other on the week-long tours. This enables them to be exposed to the diverse and innovative practices of the hosting region, providing them with more competitive technology and farming methods. For example, they get new ideas and perspectives in land preparation, variety selection, planting, tillage, fertilization, pest control, irrigation and harvesting.

All P.I.E. alumni are encouraged to attend the annual Beltwide Cotton Conferences as a way to further their knowledge of innovative technology.

Cotton producers from the Southeast heard a presentation on Delta agriculture during their visit to the Mid-South as part of the 2007 PIE program.

Cotton Leadership Program

DuPont Crop Protection Grant: $115,000

The Cotton Leadership Program, celebrating its 25th year, seeks to identify potential industry leaders and

provide them with developmental training. A class comprised of four cotton producers and one member from each of the other six industry segments participates in five, week-long sessions. These provide: policy and issue discussions with current and former industry leaders; observation of production and processing and key research across the Cotton Belt; visits with lawmakers and government and regulatory officials in Washington, DC; attendance at the National Cotton Council (NCC) annual and mid-year meetings; and communications training. Many of the 240 men and women who have participated in the program since its inception in 1983 have provided leadership in state, regional and national interest organizations. Some have served in the top positions of the NCC, Cotton Council International and The Cotton Foundation. The leadership program's alumni are active, and the program maintains a web site at http://leadership.cotton.org that provides description, application forms and other useful information.

Congressional Staff Education/Orientation Program

Monsanto Grant: $110,000

House, Senate and committee staffers get to see U.S. cotton's production and processing infrastructure by visiting farms, gins and other facilities across the Cotton Belt. The program's overall aim is to raise lawmakers' awareness of an efficient U.S. cotton sector and its contributions to this nation while fulfilling all ethical guidelines required by the Senate or the House. Another message conveyed during the tours is the U.S. cotton industry's need to compete profitably in the global marketplace. During the tours in the U.S. Cotton Belt, the Washington, DC-based staffers get to see cutting edge cotton production and processing operations, tour public and private research facilities, and visit with industry leaders on key issues facing the nation's No. 1 food and fiber crop.

Multi-Commodity Education Program

Deere & Company, Monsanto Grant: $60,000

The exchange between commodity producers in the Sunbelt and the Midwest/Far West regions is designed to strengthen communications between farmers regardless of their crop mix or the location of their operation. The program provides current and emerging producer leaders with: 1) a better understanding of production issues/concerns faced by their peers in another geographic region and 2) an opportunity to observe agronomic practices, technology utilization, cropping patterns, marketing plans and operational structure. This unique educational effort was launched in October 2006 when producers from the Midwest/Far West traveled to North Carolina to observe cotton production/processing and other agricultural operations. The schedule was developed and the trip coordinated by NCC staff in cooperation with local organizations and leaders. To complete the exchange, Sunbelt producers toured farming operations in North Dakota in 2007.

Mike Clemens, (fifth from left) a Wimbledon, ND, wheat farmer, hosted the MCEP participants, including (l to r): Bryan Patterson, Paco Ollerton, Stuart Posey, Mark McKean, Donny Lassiter, Ronnie Lee, John Willis and Lawrence Long.

Policy Education Program

Syngenta Crop Protection Grant: $60,000

More than 100 NCC producer members have been given the opportunity to learn more about the NCC's policy development and implementation process. As a result, many of those participants are involved in U.S. cotton's

central organization today. Up to four producers from each major Cotton Belt region are chosen to attend the NCC's annual meeting. In July 2007, they visited NCC's Washington, DC, operations and met with key Congressional members and received communications training at Syngenta's headquarters in North Carolina.

Members of the 2007 Policy Education Program are (l to r): Graydon Flowers, Luke Winsett, Eugene Pugh, III, Justin Jones, Charlie Meyer, Matt Huie, Steve Brown, Jonathan Spruell, Jay Barrett, Nathan Arp, Coley Bailey, Jr., and Jordan Denning.

Cotton Nematode Research and Education Program

Bayer CropScience Grant: $50,000

Losses to nematodes have steadily increased over the past decade or so, due mostly to the spread of the reniform nematode. The Beltwide Cotton Nematode Committee attributed record yield reductions to nematodes in 2006, with 5.32 percent of the crop lost to these pests. Cotton Belt nematologists and plant pathologists meet annually to discuss their research and report on their nematode population surveys. The overall aim is to curb losses to nematodes across the Cotton Belt. Information on nematodes, their distribution and control methods can be found in the updated booklet, "Cotton Nematodes: Your Hidden Enemies" and at the project's updated web site, www.cotton.org/tech/pest/nematode. Reports and seminars at the Beltwide Cotton Conferences also help further the efforts to increase awareness of the nematode threat and the available controls.

The reniform nematode is an unseen but costly cotton pest.

Cotton Seedling Disease Research and Education Program

Bayer CropScience Grant: $50,000

This program helps determine losses to the seedling disease complex. Losses to seedling disease in 2006

were 2,701,843 bales.

The program also helps identify the basic disease spectrum in each locale and offers fungicide use and application methods in each state. More information is available to producers, consultants and others through the brochure, "Know Your Seedling Diseases," and at that project's updated web site, www.cotton.org/tech/pest/seedling.

Reports and seminars at the Beltwide Cotton Conferences also help further the efforts to increase awareness of seedling diseases and available controls.

Weed Resistance Learning Module

Dow AgroSciences, Monsanto, Syngenta Grant: $36,000

The goal of this new NCC-coordinated project is to emphasize to producers the importance of preventing the occurrence of herbicide-resistant weeds, thus helping them maintain long-term stewardship of their acreage and herbicide products.

The plan includes an online weed resistance management educational module that can be accessed via the NCC's web site at http://www.cotton.org/tech/pest/wrm/. The module features tips from leading weed scientists such as herbicide use and application timing. The Module also provides general resource information on cotton herbicides and a list of contacts in each state for producers who have questions on management practices.

This project also enabled the NCC to distribute printed materials, including post cards and a brochure about the learning module, and to issue a series of news releases emphasizing the importance of resistance management stewardship.

Ongoing Special Project Contributions

Several Foundation members support the NCC-coordinated Beltwide Cotton Conferences through special

projects. Total Beltwide Cotton Conference support in 2007 was $109,500. These funds assist maintaining a high quality conference with modest registration fees for attendees.

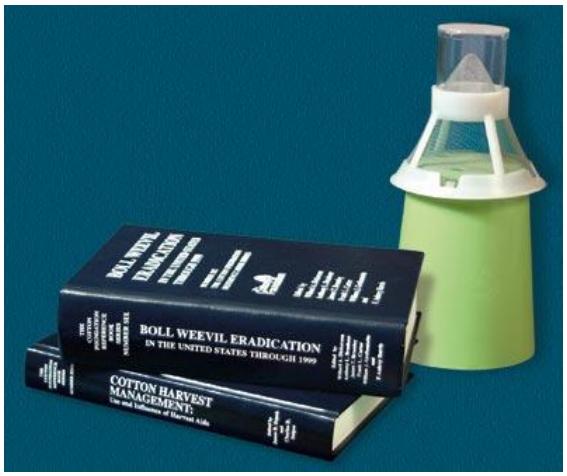
Monsanto sponsored the forum's newsroom, helping the 50-plus contingent of writers and broadcasters in their efforts to transfer needed information to industry members ahead of the Conferences' proceedings. Monsanto lent its support to the Confex Podium system, launched in 2006, where conference reports are made available via the Internet to conferees.

In addition, DuPont Crop Protection sponsored the conferences' online and on-site registration; Bayer CropScience sponsored the forum's continental breakfasts, Valent supplied the Production Conference coffee breaks, and Syngenta supported the Internet Quickstop kiosks.

Some special projects are still assisting the U.S. cotton industry even though the projects' annual grants have ceased. The Foundation continues to distribute volumes in its Cotton Reference Book Series, which can be ordered online. The series includes *Weeds of Cotton*, *Cotton Harvest Management*, *Cotton Insects and Mites*, *Vegetable Oil and Agrichemicals*, and *Boll Weevil Eradication in the United States Through 1999*. The Cotton Foundation series reference books can be purchased from the Foundation by visiting http://www.cotton.org/cf/reference-books.cfm.

Some other efforts helpful to cotton's overall research and education effort include the ginning lab fiber analysis and the periodic development and distribution of various NCC-produced educational videotapes.

The Gin Lab Symposium, sponsored by Delta and Pine Land, Syngenta, and Bayer Cropscience, aids in familiarizing extension specialists with post harvest processes of ginning and textiles to improve appreciation of end user needs



The Foundation Cotton Reference Book Series volumes can be Ordered online by visiting http://www.cotton.org/cf/reference-books.cfm.

AWARDS AND ENDOWMENTS

Harry S. Baker Distinguished Service Award For Cotton

Bruce Heiden, a former National Cotton Council president and Board chairman, received the 2006 Harry S. Baker Distinguished Service Award for Cotton. He was recognized at the National Cotton Council's 2007 Annual Meeting.

The award, named for the late California industry leader and NCC President Harry S. Baker, is presented annually to a deserving individual who has provided extraordinary service, leadership and dedication to the U.S. cotton industry.

The Arizona cotton, alfalfa and grain producer was honored for his exceptional leadership and dedicated service to agriculture. Heiden became NCC board chairman in 1990 after serving as NCC president in 1989. He also was the first Arizonan to be elected as board chairman of CALCOT, having served in that capacity from 1995-2003. He also has been chairman of the Committee for the Advancement of Cotton's Steering Committee since 1992.

Heiden's years at the NCC's helm were marked by: 1) the successful passage of the 1990 farm law, which included an improved marketing loan, 2) legislation to provide an increase in Cotton Incorporated's funding, and 3) a significant expansion in program activities and funding for Cotton Council International.

Previous honorees of the Harry S. Baker Award include Duke Barr, Bruce Brumfield, Lloyd Cline, Sen. Thad Cochran (R-MS), Robert Coker, Rep. Larry Combest, Charlie Cunningham, William B. Dunavant, Jr., Duke Kimbrell, Bill Lawson, Lon Mann, Frank Mitchener, Albert Russell, Jimmy Sanford, Earl Sears, B. F. Smith, Charles Stenholm, Jack Stone and Charlie Youngker.

Harry Baker Award winner Bruce Heiden, left, accepts loving cup from 2006 NCC Chairman Allen Helms.

Oscar Johnston Lifetime Achievement Award

The late William M. Garrard, the first general manager of Staplcotn Cooperative, was the recipient of the 2006

Oscar Johnston Lifetime Achievement Award. The announcement was made at the National Cotton Council's 2007 Annual Meeting.

The annual 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.

In 1921, Staplcotn's originating directors urged Mr. Garrard to become their first general manager. By the time that he died in 1958, Staplcotn had sold more than 10 million bales of cotton valued at $1.5 billion, with buyers in the United States, Europe and Japan. Mr. Garrard was known for his winning personality, courage, depth of character and unusual trading abilities. With this pioneering attitude, he was able to bring cooperative marketing to the Mississippi Delta. He also was known for his basic blend of ideas from which emanated the rules of cooperative marketing.

Mr. Garrard participated in the National Cotton Council's organizational meeting and served as a NCC delegate from 1939 until 1958.

Previous Oscar Johnston Lifetime Achievement Award recipients are: James E. Echols, Memphis, TN, a former NCC chairman; Sykes Martin, Courtland, AL, producer; Walter Montgomery, Sr., Spartanburg, SC, textile manufacturer; William Rhea Blake, a former NCC executive vice president; Roger Malkin, long-time chairman and CEO of Delta and Pine Land Company, and former NCC presidents, George C. Cortright, Jr., Rolling Fork, MS, producer, and Jack Hamilton, Lake Providence, LA, producer/ginner/warehouseman.

High Cotton Awards

For 13 years, the High Cotton Awards has honored full-time cotton producers who produce a profitable, high quality crop while meeting the best standards of environmental stewardship. The winners of the 2007 awards were: Justin Cariker, Dundee, MS., representing the Mid-South; Monty Rast, Cameron, SC, the Southeast; Barry Evans, Kress, TX, the Southwest; and Gil Replogle, Visalia, CA, the Far West.

2007 High Cotton Award winners from left: Monty Rast, Cameron, SC; Justin Cariker, Dundee, MS; Barry Evans, Kress, TX; and Gil Replogle, Visalia, CA.

Robert and Lois Coker Trustees Chair in Molecular Genetics

Endowment: $1,000,000

The Coker Chair has helped Clemson University obtain general assembly appropriations for biotechnology research. The chair itself attracts not only a top-notch faculty member to fill it but additional exceptional faculty as well. The resulting momentum helps attract state investments in facilities such as the new science and technology center and the state-of-the-art greenhouse complex at Clemson.

The C. Everette Salyer Fellowship in Cotton Research

Endowment: $300,000

This fellowship at Texas A & M University was inaugurated to honor the late California producer-ginner and former Cotton Foundation president, C. Everette Salyer. Doctoral and post-doctoral level students are able to study and conduct research geared to the sciences of producing and marketing cotton.

It also provides funding for recipients to attend the annual Beltwide Cotton Conferences, where they are able to share their results with industry leaders.

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.

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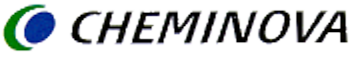

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