

**ANNUAL REPORT ON
COTTON ECONOMICS RESEARCH
1999/00**

CER-00-17

**Cotton Economics Research Institute
Department of Agricultural and Applied Economics
College of Agricultural Sciences and Natural Resources
Texas Tech University**

September 2000

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ANNUAL REPORT ON COTTON ECONOMICS RESEARCH 1999/00

Summary

This report summarizes the activities and accomplishments in Cotton Economics Research during 1999/00, which is conducted within the Cotton Economics Research Institute at Texas Tech University. Many of the accomplishments summarized in this report would not have been possible without the financial support from the Texas Legislature through Texas Tech University and the College of Agricultural Sciences and Natural Resources. Further, the able guidance of the Cotton Economics Research Advisory Committee continues to be a strong asset for our research program. The Committee represents industry segments as well as academic and government, and the members assist with keeping the program focused on issues relevant to the cotton industry and in the management of the program (Appendix A provides a complete list of our advisory committee members).

During the last fiscal year, there were 23 active cotton economics research projects (these projects are summarized in Appendix B), involving eight faculty members of the department. The subject-matter areas covered in the Cotton Economics Research program were diverse, ranging from production inputs and costs to cotton cleaning and processing to consumer demand for cotton apparel. Overall funding of the Cotton Economics Research program is summarized in Appendix C. During 1999/00, departmental research in Cotton Economics received \$127,173 in support from the Applied Economics funding through the College of Agricultural Sciences and Natural Resources and was leveraged to secure \$235,480, with a leverage ratio of 1.9:1. It shows

that \$1.90 in external funding was generated in 1999/00 for each \$1.00 in internal support; this has grown from a leverage ratio of 1.6:1 from the 1997/98 – 1998/99 biennium. It is noteworthy that about 55% of the total external funding last year was directly from the cotton industry and the remainder primarily from the federal government.

Another measure of productivity is the published output from the program, both for industry and professional audiences. A listing of publications is provided in Appendix D. Overall, the faculty authored/coauthored 33 publications (compared to 25 in 1998/99 and 30 in 1997/98), which included 11 professional journal articles, 13 proceeding papers from industry and professional meetings, 1 abstract, 7 technical articles, and 1 book chapter related to cotton economics research. There were also several stand-alone presentations at important industry meetings that were not published (see appendix E).

Education and training of students continue to be an important component of the Cotton Economics Research program. During 1999/00 there were 14 graduate students (2 Ph.D. and 12 M.S.) supported in whole or in part from research funding of cotton research projects. Another 5 undergraduate students worked on these projects as well. It is worth noting that the departmental students co-authored 24 of the 33 cotton related research publications and made several presentations at important industry meetings such as the Beltwide Cotton Conferences.

Another important accomplishment of the program last year was the increased emphasis on the public dissemination of the research activities and accomplishments. The Cotton Economics Advisory Committee, at the last year's meeting, had emphasized

the need for identifying additional means to disseminate results to the industry and the public (see Appendix G). In response, we have initiated preparation and distribution of “Fact Sheets” (Appendix H) aimed at the Texas Agricultural Extension Service personnel and “News Releases” (Appendix I) for the media. These are now being done in addition to the publication of the “Cotton Economics Research Update” (Appendix F) and making the program activities available on the departmental web site:

(<http://www.aeco.ttu.edu/cer institute.htm>). Yet another new dissemination means introduced last year was the organization of the first Research/Extension Symposium on Cotton Issues. The symposium was held in April 2000 in collaboration with the Texas Agricultural Extension Service, and the event was targeted at a select group of extension personnel involved in cotton economics and marketing programs. The focus of the symposium was to inform the group of the research projects being conducted by our faculty and to solicit input about future research priorities for the Institute. The symposium was well received and we gained useful insight from the participants.

Many new things continue to happen in the Cotton Economics Research program and are worth noting here. Two new faculty members have joined the department and are involved in cotton economics research. Dr. Samarendu Mohanty arrived on campus this summer; he is involved in our trade policy and marketing research. Dr. Heather Greer arrived in August and is working in the marketing and agribusiness areas.

APPENDIX A

ADVISORY COMMITTEE MEMBERS

1997/98, 1998/99, 1999/00, 2000/01

Cotton Economics Research Advisory Committee Members

1995/96

Dr. John Abernathy
Director
Texas A&M Research and Extension Center
Lubbock, Texas

Mr. Tommy Fondren
Cotton farmer and agribusinessman
Lorenzo, Texas

Dr. Carl Anderson
Extension Economist-Cotton Marketing
Texas A&M University
College Station, Texas

Mr. George Herron
Vice-President
Cotton Procurement, Dan River Mills
Danville, Virginia

Mr. Roy Baker
Research Leader
Cotton Production and Processing Research Unit
Agricultural Research Service, USDA
Lubbock, Texas

Mr. Bob Poteet
Executive Vice-President
Texas Cotton Association
Dallas, Texas

1996/97

Dr. John Abernathy
Director
Texas A&M Research and Extension Center
Lubbock, Texas

Mr. Tommy Fondren
Cotton farmer and agribusinessman
Lorenzo, Texas

Dr. Carl Anderson
Extension Economist-Cotton Marketing
Texas A&M University
College Station, Texas

Mr. George Herron
Vice-President
Cotton Procurement, Dan River Mills
Danville, Virginia

Mr. Roy Baker
Research Leader
Cotton Production and Processing Research Unit
Agricultural Research Service, USDA
Lubbock, Texas

Mr. Bob Poteet
Executive Vice-President
Texas Cotton Association
Dallas, Texas

1997/98

Dr. Carl Anderson
Cotton Marketing Specialist
Texas Agricultural Extension Service
Texas A&M University
College Station, Texas

Mr. Roy Baker
Cotton Ginning
Agricultural Research Service, USDA
Lubbock, Texas

Mr. Tommy Fondren
Cotton farmer and agribusinessman
Lorenzo, Texas

Mr. George Herron
Vice-President
Cotton Procurement, Dan River Mills
Danville, Virginia

Mr. Robert Joseph
President
International Cotton Marketing, Inc.
Lubbock, Texas

Dr. James Supak
Associate Head
Soil and Crop Sciences
Texas A&M University
College Station, Texas

1998/99

Dr. Carl Anderson
Cotton Marketing Specialist
Texas Agricultural Extension Service
Texas A&M University
College Station, Texas

Mr. Tommy Fondren
Cotton farmer and agribusinessman
Lorenzo, Texas

Mr. Curtis Griffith
CEO
City Bank
Lubbock, Texas

Mr. Robert Joseph
President
International Cotton Marketing, Inc.
Lubbock, Texas

Mr. Darryl Lindsey
Vice President
Plains Cotton Cooperative Association
Lubbock, Texas

Dr. James Supak
Associate Head
Soil and Crop Sciences
Texas A&M University
College Station, Texas

Dr. Dan Upchurch
Director
Cropping Systems Research
Laboratory
USDA-Agricultural Research Service
Lubbock, Texas

Tony Williams
Executive Vice President
Texas Cotton Ginners Association
Austin, Texas

1999/00

Dr. Carl Anderson
Cotton Marketing Specialist
Texas Agricultural Extension Service
Texas A&M University
College Station, Texas

Mr. Curtis Griffith
CEO
City Bank
Lubbock, Texas

Mr. Carleton Davis
Economist
Dunavant Enterprises, Inc.
Memphis, Tennessee

Mr. Darryl Lindsey
Vice President
Plains Cotton Cooperative Association
Lubbock, Texas

Dr. Jaroy Moore
Resident Director
Texas Agricultural Experiment Station
Lubbock, Texas

Dr. Dan Upchurch
Director
Cropping Systems Research
Laboratory
USDA-Agricultural Research Service
Lubbock, Texas

Mr. Steve Verett
Executive Vice President
Plains Cotton Growers
Lubbock, Texas

Mr. Tony Williams
Executive Vice President
Texas Cotton Ginners Association
Austin, Texas

APPENDIX B

PROGRESS REPORTS OF COTTON ECONOMICS

RESEARCH PROJECTS, 1999/00

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: A Marketing Strategy for Cotton Producers Based on Mean Reversion in Cotton Futures Prices

Principal Investigator: Emmett Elam

Source and Amount of Funding: Cotton Inc., \$6,720 (for 1/99-12/99).

Objectives: To develop and test a simple marketing strategy to increase returns for Texas cotton producers.

Description of Project and Significance: One objective of a cotton producer is to market his crop at favorable prices. However, this is quite challenging, and, in fact, it is probably easier to increase yield and reduce production cost than to implement a successful marketing strategy. Nevertheless, a cotton producer should not ignore the potential to increase returns through better marketing strategies. This will be particularly important in the future as government programs are phased out and cotton producers are obliged to market their cotton in a highly competitive, international marketplace.

This research developed and tested a simple marketing strategy to increase returns for Texas cotton producers. The strategy was based on an anomaly in futures pricing termed mean reversion, which is the tendency of a commodity price, when disturbed from its equilibrium value, to revert back to the equilibrium. A marketing strategy based on mean reversion calls for selling futures when the price is above the equilibrium (historical mean) value. The cotton producer can use the anticipated profit from the futures market to supplement the revenue received from the cash market.

Accomplishments: This study found evidence of mean reversion in December cotton futures prices in that when the planting time (March) price of December cotton futures was high relative to the long-term average price, the harvest price would tend to be lower; and vice versa. Hedging (and speculation) strategies, devised to take advantage of mean reversion, showed significant returns in a 19-year simulation. For example, the simulation results show that over the simulation period a cotton producer could have increased his selling price by 2.47 cents per lb. from using a mean reversion marketing strategy.

Funding Generated: None.

Future Plans: There are no plans to continue this research.

Public Dissemination of Results: One Beltwide presentation, and one Beltwide proceedings paper.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Further Development of the Cotton Wizard Cotton Variety Selection Program.

Principal Investigator: Emmett Elam

Source and Amount of Funding: Cotton, Inc., \$11,500 (1/00-12/00).

Objectives: To develop a computer model using lint and seed components to aid in cotton variety selection for the U.S. Cotton Belt.

Description of Project and Significance: A cotton variety selection model was developed to include the seed component (seed yield and quality) in addition to the usual lint component (lint yield and quality). A computer implementation of the model--named the Cotton Wizard--has been developed to assist decision makers in cotton variety selection. The program uses objective data generated by agricultural experiment stations across the U.S. Cotton Belt, or from other sources provided by the program user. The decision criteria for variety selection is based on expected economic return (mean net revenue) of a variety and the variability of returns (coefficient variation). Total revenue is calculated from lint prices and seed prices, and lint and seed yields. Lint and seed prices are determined by their respective quality characteristics. Adjustments are made for costs that may differ among varieties, such as planting seed cost, and harvest and ginning costs. Users are provided with information on varieties--such as mean net revenue (total revenue - costs), variability in net revenue, and ergonomic characteristics--to aid in the decision process. The Cotton Wizard program is distributed as a Microsoft Windows compatible product.

Accomplishments: A new data set was developed for the Cotton Wizard program to include cotton varieties grown in West Texas performance trials. This data set includes all varieties grown at five West Texas locations for irrigated and dryland trials for the years 1991-99. Final checking of the program output results was completed. A beta test of the program is being organized (with assistance from Dr. Randy Boman, TAEX) for Spring 2001.

Funding Generated: None.

Future Plans: Develop annual updates of the performance trial data sets (for the U.S. and West Texas) used by the Cotton Wizard computer program, and incorporate the updates into the program.

Public Dissemination of Results: The Cotton Wizard program was demonstrated at the First Annual Research/Extension Symposium on Cotton Economics Issues, Texas Tech University. One journal article is in process.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Value Added Cotton Products for Animal Feed.

Principal Investigator: Emmett Elam, with Co-Principal Investigators, Reed Richardson (ASFT), Sam Jackson (ASFT), Carlos Villalobos (RWF), Jacqui Lockaby (AE&C), and Co-workers Greg Holt and Weldon Laird (USDA, ARS).

Source and Amount of Funding: Applied Economics Research, \$10,000 (9/99-8/00); Research Enhancement Program, College of Ag. Sci. & Nat. Res., \$20,000 for Ag. & Appl. Econ. (9/99-8/00) of total project funding of \$66,650.

Objectives: To design new formulations and develop technology that will enable the economical production and use of value-added cotton products for animal feeding.

Description of Project and Significance: Over 1.2 million tons of cotton gin trash are produced in Texas each year with a total annual statewide disposal cost of almost \$2 million. This project will examine the technical and economic feasibility of using extrusion processing to produce a value-added product from raw cotton gin trash. A pilot extrusion process is in operation at the USDA Gin Lab in Lubbock, TX. The pilot process is being used to formulate technically feasible gin trash feed products. Engineering and economic cost analysis will be used to estimate the cost structure of a full-scale prototype system (with one to eight Insta-Pro dry extruders) that produces gin trash feed products. Economic price analysis of gin trash feed products will allow determination of feed value (product price) based on the nutritional characteristics of the feed product. The economic feasibility of a business enterprise engaged in processing gin trash into livestock feed products will be assessed by quantifying the profitability and financial risk of the enterprise. This research has a number of potential benefits: higher revenue for producers/ginners; a more digestible/palatable roughage ingredient for livestock producers; and a value added enterprise that creates jobs and increases income for rural communities.

Accomplishments: An engineering-economics cost analysis is in progress (90% complete) to determine the cost of dry-extrusion processing (for a full-scale plant) of raw cotton gin trash into a livestock feed product. An outline was developed that details the overall research effort on the economics of extruding a livestock feed product from cotton gin trash (with a detailed list of six individual projects). The outline was submitted to Cotton Incorporated and discussions are on-going on funding of additional projects on gin trash research.

Funding Generated: This research was instrumental in involving Ag. & Appl. Economics (with the USDA Lubbock Gin Lab and ASFT at Texas Tech Univ.) in the Cotton Byproducts (COBY) project funded by Cotton Inc. (\$25,000 for Jan.-Dec. 2000). One proposal was submitted to the PROFIT Legislative Initiative (not funded).

Future Plans: Will continue research on the full-scale gin trash extrusion plant in Summer 2001 (with funding of \$10,000 from CASNR). Discussions are on-going with Cotton Incorporated about additional funding for economic, engineering, and animal research on cotton gin trash.

Public Dissemination of Results: One newspaper interview (article published in University Daily, Texas Tech University); one TV interview (aired three times on Channel 28); one interview with AE&C students at Texas Tech University. Responded to 10 requests from industry for information on our cotton gin trash research.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Economic Evaluation of the Profitability and Feasibility of Bt Cotton and Corn in the Texas High Plains

Principal Investigator: Phillip Johnson

Source and Amount of Funding: Texas Corn Producers Board, \$1,000 (1/00-12/00) and Applied Economic Research, \$20,804 (9/99-8/00)

Objectives: Evaluate the potential impacts on costs of production, yields, and profitability of the use of Bt corn varieties in the Texas High Plains (THP).

Description of Project and Significance: The use of transgenic crop varieties in the THP is becoming an important production practice for many farmers. Transgenic crop varieties have the potential of reducing production input costs and the use of chemicals in the crop production system. A survey of corn producers throughout Texas is being used to gather information on the costs and benefits of Bt corn.

Accomplishments: A survey of corn producers throughout Texas has been sent to gather information on the costs and benefits of Bt corn. In addition, entomologists through out the THP have been contacted to elicit expert opinions on the factors relating to the adoption of the Bt technologies.

Funding Generated: Texas Corn Producers Board (\$1,000 for 1/1/00 through 12/31/00)

Public Dissemination of Results: None to date.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Feasibility of Specialty Cotton Yarn Production in West Texas

Principal Investigators: Dean Ethridge, Khalil ur Rehman, Jaffar Rahman (ITC) and Kary Mathis

Source and Amount of Funding: International Cotton Research Center, \$13,000, and Texas Independent Ginners Association, \$6,000 (5/00-8/01)

Objective: To analyze the feasibility of a specialty cotton yarn mill in West Texas.

Description of Project and Significance: Even though the region around Lubbock is the largest cotton-producing area in the world, very few textile plants operate in the region. The removal of trade barriers for textile products by 2005 will bring dramatic change to the global market and competitive environment for these products. Developments in ring-spinning technology also make smaller plants more efficient and enable plant operators to change product types to meet market demands. Preliminary results indicate that the cost of cotton accounts for 60 percent to 70 percent of the total end product value, so regions with a large cotton supply could be expected to have a competitive advantage in a deregulated world textile market.

Accomplishments: Considerable information has been gathered, and the study is planned to be complete by fall, 2000.

Funding Generated: Additional funding from individual investor groups or economic development organizations is possible.

Future Plans: Investigators will be prepared to assist economic development organizations and agencies in preparing specific analyses for particular locations.

Public Dissemination of Results: When completed, the report and related information will be distributed to sponsors and to those providing information, and to any other interested parties.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Daily Price Analysis and Reporting for the Texas-Oklahoma Cotton Market

Principal Investigator(s): Sukant Misra and Don Ethridge

Cooperators: Plains Cotton Coop. Assn., DTN - Cotnet, and Intelligent Cotton Market

Source and Amount of Funding: Cotton Inc. and the Texas State Support Committee, \$30,000 (1/00-12/00)

Objectives: To develop, validate, and operate an objective system for estimating cotton prices and quality attribute premiums and discounts in the Texas-Oklahoma markets and disseminate that information to market participants.

Description of Project and Significance: The Daily Price Estimation System (DPES) has been developed, tested, and reported. Daily estimates of prices and premiums/discounts are generated for each day that has sufficient spot market activity to make reliable estimates. Daily, weekly, and annual reports are produced and released to the market. Several major papers documenting the system and presenting the procedures that have been developed to insure its continued accuracy have been published in professional journals, and numerous industry-oriented publications and presentations have been produced. The DPES offers the only obvious vehicle for improving the producer spot price analysis and reporting system for cotton in the U.S. at this time.

Accomplishments: The research has demonstrated that price estimation and reporting can be done in such a way as to be scientifically verifiable, based on a large daily volume of actual producer spot market transactions, and very timely. It has also shown that USDAs Daily Spot Cotton Quotations (DSCQ) contain errors that are large in some instances, and that the errors are systematic; producers are receiving larger quality premiums and smaller quality discounts from the market than the DSCQ indicate, at least in the Texas-Oklahoma markets. The research further shows that this persistent pattern has resulted in a loan schedule that is causing marketing system pricing inefficiencies.

Funding Generated: This research is instrumental in securing funding of \$368,228 from the Committee for Cotton Research Inc. for an ongoing research project entitled Development of a National Daily Price Estimation System for Cotton.

Future Plans: We want to continue this work for as long as funding can be secured to support it.

Public Dissemination of Results: Results were presented at the Beltwide Cotton Conferences in 2000. All research results are provided to the Texas Agricultural Extension Service as they are generated so that they can be made available to the public and the cotton industry through their educational system. Daily, weekly, monthly, and annual summary reports are available on The Cotton Economics Research Institute web page at www.aeco.ttu.edu/DPES.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Development of a National Daily Price Information System for Cotton

Principal Investigator(s): Don Ethridge and Sukant Misra

Cooperators: Plains Cotton Coop. Assn., DTN - Cotnet, and Intelligent Cotton Market

Source and Amount of Funding: Committee for Cotton Research, Inc., 1998-2001: \$368,228.

Objectives: To extend the Daily Price Estimation System, or DPES, which is already developed for the Southwest cotton production region, to the other market regions in the U.S. Specifically, the general objective of this project is to develop, validate, and operate an objective system for estimating cotton prices and quality attribute premiums and discounts in all market regions in the U.S. and to disseminate that information to market participants.

Description of Project and Significance: The Daily Price Estimation System (DPES) has been developed, tested, and reported for the Southwest cotton production region. Daily estimates of prices and premiums/discounts are generated for each day that has sufficient spot market activity to make reliable estimates. Daily, weekly, and annual reports are produced and released to the market. Several major papers documenting the system and presenting the procedures that have been developed to insure its continued accuracy have been published in professional journals, and numerous industry-oriented publications and presentations have been produced. The DPES offers the only obvious vehicle for improving the producer spot price analysis and reporting system for cotton in the U.S. at this time. Thus, there is a need to extend the DPES to the remainder of the cotton growing regions.

Accomplishments: Problems with the availability of daily transaction data from the cooperating marketing agencies have delayed the progress of this project; however, full implementation of the project is anticipated as soon as data become available.

Funding Generated: None.

Future Plans: The project was stopped in January, 2000, because of problems in transferring data. The project will resume when we can secure a reliable flow of daily sales data from regions outside Texas and Oklahoma.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Developing a Cotton Processing Quality Simulation Model

Principal Investigator(s): Sukant Misra
Cooperator: Dr. Garry Barker, ARS/USDA

Source and Amount of Funding: ARS/USDA, \$80,783 (8/98-12/01)

Objectives: The objective of this project is to develop a cotton processing simulation model to provide insight into the effects of operating parameters, drying, cleaning and ginning on fiber quality factors. The simulation model will estimate cotton quality as it passes through the various sequences of gin machinery used to process stripper harvested cotton and should allow the ginner to optimize the ginning process.

Description of Project and Significance: The final quality and value of the ginned lint are a function of the initial conditions of the seed cotton, the number, type, and sequence of overhead (seed cotton) cleaning and drying machines, the number and type of lint cleaning machines, the mass flow rate through the machines and individual machine operating parameters. If initial conditions of each bale of seed cotton were the same, a standardized sequence of ginning activities could be identified to optimize the final quality and value of the ginned lint. However, the initial conditions of the seed cotton often vary due to a host of factors that are beyond a producers control, making it necessary to alter the sequence of ginning activities required to optimize the quality of each bale of cotton.

Availability of a cotton processing quality simulation model will benefit the ginner in that the model can be amenable to manipulation in the sequence of ginning activities which would be impossible, too expensive, or impractical to perform in the real world setting.

Accomplishments: The development of the mathematical lint-cleaner relationships of the simulation model has been completed. The second phase of the project is currently underway, which deals with the development of a web-based simulation program to provide the ginning industry with a user-friendly means to accurately determine a ginning configuration to optimize fiber qualities of cotton and to maximize producer profit.

Funding Generated: The research has generated \$20,000 additional funding from ARS/USDA.

Future Plans: This research is expected to be concluded by the end of 2000/01 fiscal year.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Evaluating Crop and Revenue Insurance Products as Risk Management Tools for Texas Cotton Producers

Principal Investigator(s): Sukant Misra

Source and Amount of Funding: Applied Economics Research, \$22,998 (9/99-8/00)

Objectives: The overall objective of this research is to evaluate the effectiveness of various crop and revenue insurance products as risk management tools for Texas cotton producers. The proposed research will develop a flexible means of evaluating economic impacts of crop and revenue insurance purchase decisions for cotton producers.

Description of Project and Significance: Changes in farm programs and other new approaches to farm policy, including increased reliance on the global marketplace, have now exposed producers to increased levels of both production and marketing risk. Managing this increased risk is a key to economic competitiveness and success of U.S. and Texas producers. Texas has the largest area devoted to cotton production of any single state. Texas cotton farmers produced approximately 4.4 million bales of cotton for a value of about \$1.6 billion, approximately 25 percent of the total production in the United States in 1996. Given the availability of various insurance options with varying provisions, costs, and protection levels, there is a need for producers to better understand their effectiveness as risk management tools. The proposed research will develop a flexible means of evaluating economic impacts of crop and revenue insurance purchase decisions for cotton producers.

Accomplishments: By utilizing producer-level information, the study found that the Catastrophic option, the MPC1 50 and 60 yield coverage levels, and the CRC 50 coverage level are cost-effective risk management tools from producers' perspective. Premium rates were, however, determined to be generally high for most other buy-up insurance products.

Funding Generated: The research has generated no further funding at this time.

Future Plans: We intend to expand this work to other counties of Texas.

Public Dissemination of Results: Results will be presented at the 2001 Beltwide Cotton Conferences and at the 2001 Southern Agricultural Economics Association annual meeting.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Comparing Costs of Alternative Cotton Harvesting Systems in Texas

Principal Investigator(s): Sukant Misra
Cooperator: Dr. Alan Brashear, ARS/USDA

Source and Amount of Funding: Cotton Inc., \$26,548 (1/98-12/00)

Objectives: The objective of this research is to evaluate performance and cost effectiveness of selected cotton harvesting systems in Texas and to develop a web-based harvesting cost calculator to provide producers a user-friendly means to accurately estimate harvesting cost.

Description of Project and Significance: A persisting question with cotton production is that of identifying cost reducing strategies to help producers in effective risk management. The cotton harvesting component of the cotton production system is complex and expensive. Because of significant advancement in harvesting and seed cotton handling technology, producers now have a choice of alternative cotton harvesting systems.

Accomplishments: The first phase of this research has estimated costs of alternative stripper and picker cotton harvesting systems to determine the least cost harvesting method for a typical cotton operation in Texas. Results of the study has indicated that a typical Texas cotton producer (with a yield of 480 pounds per stripper harvested acre and a farm size of about 700 acres) would minimize the cost of harvesting by investing in a four-row stripper without or with a bur-extractor. For picker harvesting with an average yield of 815 pounds per acre and a farm size of about 700 acres, the harvesting cost would be minimized with the ownership of a two-row picker.

The second phase of the project has developed a web-based harvesting cost calculator to provide producers a user-friendly means to accurately estimate harvesting cost. A trial version of the calculator is currently being tested by a small group of industry cooperators, and it is anticipated that the software will be available to industry members soon.

Funding Generated: The research has generated no further funding at this time.

Future Plans: This research is expected to be concluded by December 2000.

Public Dissemination of Results: One journal article, 1 proceeding paper, 1 abstract, and will be presented at the 2001 Beltwide Cotton Conferences.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Supply and Demand for Fiber Attributes for the Texas and Oklahoma Producer Cotton Market

Principal Investigator(s): Sukant Misra and Don Ethridge

Source and Amount of Funding: This project is a spin-off study of the Daily Price Analysis and Reporting for the Texas-Oklahoma Cotton Market.

Objectives: The general objective of this study is to examine changes in cotton fiber attribute values for the Texas and Oklahoma cotton marketing regions resulting from the supply of and demand for these attributes.

Description of Project and Significance: While many studies of price discovery analysis on cotton have been conducted, they have merely identified cotton prices as a function of its characteristics. These studies provide only a static view of the cotton market. The focus is on price discovery, not price formation, i.e., these studies have succeeded in discovering the relationship between cotton prices and quality characteristics of lint, given cotton fiber attribute values. However, the fundamental relationships that dictate how and why cotton fiber attribute values are formed have been largely ignored. Thus, the general objective of this study is to examine changes in cotton fiber attribute values for the Texas and Oklahoma cotton marketing regions resulting from the supply of and demand for these attributes. Results of this study could be instrumental in a clear understanding of the cotton price formation process.

Accomplishments: During the last year, we have made some significant progress in the execution of the project. Kevin Hoelscher (graduate student working on the project) defended his research proposal and is currently in the final stage of the modeling work.

Funding Generated: The research has generated no further funding at this time.

Future Plans: This research is expected to be concluded by December 2000.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Comparing Profitability of Ultra-Narrow-Row Cotton With Conventional Stripper Harvested Cotton

Principal Investigator(s): Sukant Misra and Phil Johnson

Source and Amount of Funding: Cotton Inc., \$16,000 (1/00-12/00)

Objectives: The objective of this research is to evaluate and compare the profitability cotton produced under ultra-narrow-row and conventional row spacing.

Description of Project and Significance: A persisting question among cotton producers is that of identifying crop practices that will maximize profits in a given year. Recently, many cotton producers have been considering alternative management practices and/or crops for increasing net revenues. Some producers are currently exploring the adoption of ultra-narrow-row as an alternative to conventional row spacing. However, empirical evidence regarding how costs and revenues of ultra-narrow-row compare with conventional row spacing is not currently available.

Accomplishments: We have identified a small group of farmers from the Southern High Plains of Texas producing both ultra-narrow-row cotton and conventional cotton to collect relevant data for the purpose of this study. Data pertaining to all financial records for both the ultra-narrow-row and conventional row cotton practices will be collected from these farmers for 2000 and 2001 crop years.

Funding Generated: The research has generated no further funding at this time.

Future Plans: This research was initiated in July 2000 and is expected to be concluded by December 2001.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Demand for U.S. Made Cotton Apparel and its Implications for the Cotton Industry

Principal Investigator(s): Sukant Misra and Octavio Ramirez

Source and Amount of Funding: USDA/CSREES through the International Cotton Research Center, \$28,000 (9/00-8/01)

Objectives: The central objective of this research is to understand consumer demand for U.S. made cotton apparel (cotton and denim) and to analyze their demand growth potential relating to consumer socioeconomic profiles and geographical regions.

Description of Project and Significance: This study would provide information to help industry make production, processing and marketing decisions, and help strengthen the demand for U.S. made cotton apparel, and thus improve the long-term economic vitality and profitability of the cotton industry.

Accomplishments: Mahamadou Fadiga, a Ph.D. student of the department, has been hired to work on this project as a partial requirement of his Ph.D. program. Mahamadou is currently developing the dissertation research proposal, which will provide the conceptual and procedural foundation for the proposed work. We have also communicated with the Cotton Incorporated in regard to the data needs for the project and we expect to receive their survey database by December 2000.

Funding Generated: The research has generated no further funding at this time.

Future Plans: This project was initiated in September 2000 and is expected to be concluded by August 2002.

Public Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Technology Adoption Contributions to Resource Valuation

Principal Investigator: Eduardo Segarra. The Research Assistant who worked on this project was Jingwei Wei.

Source and Amount of Funding: Applied Economics Research \$13,000 (9/99-8/00).

Objective: To evaluate the contributions/impacts of technology adoption to resource valuation.

Description of Project Significance: Modification of the genetic structure of crop plants through biotechnology and the impacts on water conservation from the use of advanced irrigation system technology are among the crop production improvement strategies that can lead to the improved utilization of resources in semi-arid land environments. The Texas High Plains is an important area for dryland and irrigated production of cotton, grain sorghum, wheat and corn. This area produces over 20 percent of the national production of cotton, and over 10 percent of the national production of grain sorghum. In the Texas High Plains approximately 3 million acres of cropland are irrigated with water extracted from the Ogallala Aquifer. Furthermore, the semi-arid climate in the Texas High Plains along with the existence of abundant water resources and feed grains, make this area ideal for cattle feeding activities. Over 25 percent of the annual national production of fed cattle, over 5 million head, are produced in this area. As it would be expected, the economy of the Texas High Plains critically depends on crop and livestock production activities, which in turn critically depend on the availability of water and other natural resource endowments available in the area. It is estimated that over 40 percent of the pre-development water stock of underground water in the Ogallala Aquifer has been used. For this reason, it is important to find out how biotechnological advances and other production technologies, irrigation technologies in particular, which available to agricultural producers in the area, can help enhance or at least maintain the viability of agriculture in the Texas High Plains.

Accomplishments: The main activity under this project has been the work that the graduate student working on this project, Jingwei Wei, has accomplished towards her M.S. thesis entitled: An Evaluation of the Impacts of Technological Progress on Cropland Values. It is anticipated that she will defend her thesis this Fall semester, 2000.

Funding Generated: None

Dissemination of Results: A manuscript out of the M.S. thesis work of the previous graduate student working on this project was presented at the triennial meetings of the International Association of Agricultural Economists in Berlin, Germany in August, 2000. Also, a manuscript has been submitted for possible publication in Resources, Conservation and Recycling.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: The Economics of Precision Farming in Cotton Production

Principal Investigator: Eduardo Segarra. The Research Assistant who worked on this project was Man Yu.

Source and Amount of Funding: Applied Economics Research, \$18,500 (9/99-8/00)

Objective: to evaluate the profitability and possible environmental implications of precision farming practices in cotton production in the Texas High Plains. In particular, focus will be placed on the precise application of fertilizer and irrigation water in cotton production.

Description of Project Significance: Production agriculture is facing significant changes, including changing federal farm programs, escalating costs of production, pest resistance to chemicals, and public concern about the impacts of agricultural production on the environment. Texas High Plains cotton producers increasingly compete in the global economy to produce a quality product at competitive prices while using production practices that are benign to the environment. Agricultural researchers and producers are responding to these challenges by developing and adopting new and advanced agricultural production technologies. Historically, agricultural crop production management practices treat crop fields uniformly. That is, no within field spatial disaggregation of inherent characteristics and/or the impacts of applied inputs of production is conducted with respect to soil fertility, soil water holding capacity characteristics, weed and pest infestations, fertilizer use, water use, and yield potential. Precision farming, precision agriculture or site-specific management recognizes within field spatial variability and seeks to optimize variable input use within the field. These practices have great potential for improved input utilization efficiency, enhancement of profits, and reduction of environmental impacts from crop production.

Accomplishments: Mr. Man Yu, the Ph.D. student working in this project, finished his Ph.D. Dissertation proposal entitled: "Economic Evaluation of precision Framing Practices" and defended it. It is anticipated that he will complete his dissertation this Fall, 2000. A presentation of precise nitrogen fertilizer use in cotton was made at the Beltwide Cotton Conferences. Also, because parallel studies to the evaluation of cotton precision farming practices are on-going for grain sorghum and corn. This information was used for two additional professional presentations.

Funding Generated: Funding for a Ph.D. level Research Assistantship and another M.S. graduate student for \$52,000 have been secured for the Sept. 1999 - Aug. 2001 period from the Texas A&M University Precision Agriculture Initiative

Dissemination of Results: One presentation was made at the Beltwide Cotton Conferences. Work is on-going on additional presentations to be made at professional meetings and one journal article.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Precision Farming - Site Specific Production Systems: Economics of Precision Farming Practices in the Texas High Plains

Principal Investigator: Eduardo Segarra. The Research Assistant who worked on this project was Susan Bondurant (Susan Watson).

Source and Amount of Funding: Texas A&M University Precision Agriculture Initiative, \$52,000 (9/99- 8/01) (through Texas A&M University).

Objective: to evaluate the profitability and possible environmental implications of precision farming practices in grain sorghum, corn, peanuts, and cotton production in the Texas High Plains. In particular, focus will be placed on the precise application of fertilizer and irrigation water, weather factors, and pests (weeds, diseases, and bugs) interactions.

Description of Project Significance: Production agriculture is facing significant changes, including changing federal farm programs, escalating costs of production, pest resistance to chemicals, and public concern about the impacts of agricultural production on the environment. Texas High Plains agricultural producers increasingly compete in the global economy to produce a quality product at competitive prices while using production practices that are benign to the environment. Agricultural researchers and producers are responding to these challenges by developing and adopting new and advanced agricultural production technologies. Historically, agricultural crop production management practices treat crop fields uniformly. That is, no within field spatial disaggregation of inherent characteristics and/or the impacts of applied inputs of production is conducted with respect to soil fertility, soil water holding capacity characteristics, weed and pest infestations, fertilizer use, water use, and yield potential. Precision farming, precision agriculture or site-specific management recognizes within field spatial variability and seeks to optimize variable input use within the field. These practices have great potential for improved input utilization efficiency, enhancement of profits, and reduction of environmental impacts from crop production.

Accomplishments: Susan Bondurant (Susan Watson), the Ph.D. student working in this project, has made tremendous progress in this project since she started her Ph.D. degree in January, 2000. To date she has already completed two different sub-projects dealing with grain sorghum production issues and already started to work on cotton and corn. It is anticipated that she will also get to work with peanuts this coming year. Two briefing papers were completed and will become a base for two journal articles that will be submitted for publication this upcoming year.

Funding Generated: None.

Dissemination of Results: One presentation was made at the annual meeting of the Texas A&M University's Precision Agriculture Industry Advisory Panel in Plainview,

Texas. Work is on-going on additional presentations to be made at professional meetings and two journal articles.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Improving Nitrogen Fertilizer Use-Efficiency in Deficit-Irrigation Systems for Cotton in the Southern High Plains.

Co-Principal Investigator: Eduardo Segarra.

Source and Amount of Funding: National Research Initiative, United States Department of Agriculture, \$318,500 (share \$34,000 through Texas A&M University) (9/99-8/02)

Objective: to evaluate the profitability and possible environmental implications of improved nitrogen fertilizer use efficiency in irrigated cotton production in the Texas High Plains.

Description of Project Significance: Production agriculture is facing significant changes, including changing federal farm programs, escalating costs of production, pest resistance to chemicals, and public concern about the impacts of agricultural production on the environment. This project seeks to improve the economics of nitrogen fertilizer use while minimizing possible environmental damages in irrigated cotton production in the Texas High Plains.

Accomplishments: This study started last September. Therefore, this season was the first season in which cotton is being produced. However, the results thus far seem to be quite favorable and it is hoped that good data will be coming out of this year experiments at two locations. Work with this data will start late this

Funding Generated: None.

Dissemination of Results: None.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Sustainable Crop/Livestock Systems in the Texas High Plains.

Cooperator: Eduardo Segarra.

Source and Amount of Funding: Southern Region SARE/ACE Program, United States Department of Agriculture, \$231,380 (share \$35,540 through Texas Tech University)(4/97-3/00)

Objective: to evaluate the profitability and sustainability of alternative crop and livestock production systems in the Texas High Plains.

Description of Project Significance: Increased ground water resource scarcity in the Texas High Plains will impact negatively production agriculture. Other issues increasingly impacting agriculture include: changing federal farm programs, escalating costs of production, pest resistance to chemicals, and public concern about the impacts of agricultural production on the environment. This project seeks to evaluate both, the economic profitability and environmental sustainability of possible alternative crop and livestock production systems in the Texas High Plains.

Accomplishments: This study ended as of March, 2000. However, efforts are being made to seek additional funding to continue it. A report documenting the economic and environmental implications of a production system that contains cotton production, small grain production, old world blue steam permanent pasture, and cattle production was produced. This report documents the higher profitability, reduced chemical utilization, and reduced use of ground water resources as compared to traditional cotton monoculture production practices common in the Texas High Plains.

Funding Generated: None.

Dissemination of Results: A report documenting the 1999-2000 production season was produced. Two presentations were made at Texas Tech University's farm in New Deal, Texas. A journal article to be submitted for publication this fall is in the final stages.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Risk and Returns from Prices, Yields and Production Costs in Cotton and Competing crops in Texas

Principal Investigator: Octavio A. Ramirez

Source and Amount of Funding: Applied Economics Research, \$19,288 (9/99-8/00)

Objectives: To understand the behavior of cotton, wheat, sorghum and corn prices, yields and production costs through time, at the farm, regional (West Texas) and state levels; and to use this understanding for applied risk analysis projects.

Description of the Project and Significance: Cotton, wheat, sorghum and corn are key agricultural commodities in Texas. Both average profitability and risk are important to evaluate the likely impact of growing different agricultural commodities on the welfare of farmers and of the local, regional and state economy. The risk-return relations among crops are quite complex. For instance, low yields for one commodity may often be accompanied by high prices, and vice versa. High/low yields of that commodity may or may not usually be accompanied by high/low yields of others. The effect of generalized (aggregate) yield fluctuations on price may be quite different depending on the commodity. The trends of commodity prices and their variability could differ, as well. The yield and price patterns of certain commodities may be more abnormal than others. Individual farmer decisions have an impact at the aggregate (county, region and state) level. County, regional and state authorities, and industry groups need to be aware of the economic risks and returns associated with the growing of different commodities. Understanding of those relationships will improve farmer, industry and policy makers' decisions.

Accomplishments:

- I. The modeling and simulation of the cotton, corn, wheat and sorghum irrigated and dry-land yield distributions and of the U.S. price distributions for these same commodities.
- II. Using these distributions for applied risk analyses evaluating the effect of crop production trends/possibilities on the agricultural economy of West Texas, and analyzing the effectiveness of crop insurance products from the farmer's and industry perspectives.

Funding Generated: The research conducted in this project, and the expertise and results obtained strengthen the justification for the FAPRI cotton modeling initiative submitted to the U.S. Congress.

Future Plans: The future focus of this project would be on estimating more detailed supply response functions for cotton and competing crops in Texas and other U.S. regions, which strongly complements the FAPRI cotton modeling initiative.

Public Dissemination of Results: The results from this research project have been presented at an invited paper session in the annual 2000 meetings of the *Southern Agricultural Economics Association* and published in a M.S. thesis and an article in the *Journal of Agricultural and Applied Economics*. Additional results have been presented at and published in the proceedings of the 2000 *Beltwide Cotton Conferences*. Another study involving results of this project is currently being considered for publication in the *American Journal of Agricultural Economics*. A third paper presenting some of the methods developed for this research has been submitted for possible publication in *Econometric Reviews*.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Management Strategies for Optimum Input Use, Yields and Quality of Cotton in the Texas High Plains.

Principal Investigators: Octavio Ramirez, Phillip Johnson, and Don Ethridge; Dan Krieg, Cary Green and Richard Zartman, (PSS); and Eric Hequet and Dean Ethridge,(ITC).

Source and Amount of Funding: International Cotton Research Center, \$45,000 (AAEC share) (9/98-11/00)

Objectives: To determine and quantify how cotton production system variables individually and collectively affect cotton yields and quality attributes, and to develop general optimization (input use) prescriptions for alternative weather and resource availability situations.

Description of the Project and Significance: The Texas Tech Plant and Soil Science Department has compiled a data set from cotton management experiments conducted over the last three years (1997-99). The International Textile Center (ITC) has analyzed the quality of the lint from these experiments. Six production functions will be estimated. The data has been used model the relationships between cotton lint and seed yields, quality factors (staple, micronaire, and strength) and turnout that can be expected when using different production practices (varieties, irrigation water rates, and phosphorus fertilization methods and rates) given the prevailing uncontrollable factors (rainfall and temperature). These production response functions have been used to predict the effect of different, feasible combinations of the crop production and management practices and varieties investigated on cotton yields and quality, under average and alternative temperature and rainfall scenarios. The production costs have been estimated from experimental data and consultation with farmers and cotton experts. The cotton (base-quality) prices, and the premiums and discounts resulting from the quality variations have been predicted using current Texas Tech research. The combination of practices that would provide the maximum profits under the different weather pattern scenarios is being identified from the former. The impact of variations in West Texas weather on the recommended crop management practices and on the profitability of cotton production will also be evaluated using this information.

Accomplishments: Two M.S. students have been involved in this project. Accomplishments to date include:

- I. Estimating cotton lint and seed yield and quality (micronaire, staple, strength and turnout) response functions.
- II. Predicting/evaluating the effect of variety and input use on cotton yields and quality under average and alternative rainfall and heat-unit scenarios.
- III. Evaluating the profitability of different variety-input use combinations under a variety of weather scenarios.

Funding Generated: The preliminary results of this project have been used to obtain funding from the Texas State Support Committee (Cotton Incorporated) (\$10,000) to finalize the economic analysis during the year 2001.

Future Plans: The estimated production response functions, production cost and price premium/ discount data will be used to conduct the proposed economic (cost/benefit) analysis.

Public Dissemination of Results: The results on the effect of management practices and genetic factors on cotton yields and quality have been presented at and published in the proceedings of the 2000 *Cotton Beltwide Conferences*. The results of the economic (cost/benefit) analysis will be presented at and published in the proceedings of the 2001 *Cotton Beltwide Conferences*. Journal articles summarizing these results are being prepared and will be submitted for publication in professional journals.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Economic Thresholds for Boll Weevil Management in the South Plains.

Principal Investigators: Octavio Ramirez and Scott Armstrong (PSS).

Source and Amount of Funding: None.

Objectives: To determine economically optimal decision criteria for the chemical control of the cotton boll weevil in the Texas High Plains using recently developed procedures, and to assess the validity of the economic threshold currently recommended to farmers.

Description of the Project and Significance: The boll weevil is a major cotton pest that is becoming established and could cause significant economic damage in the Texas High Plains. Economic thresholds are practical criteria to decide at which population level it becomes economically justifiable to make chemical applications to control a given pest, given the per-application cost and expected crop prices. This project assesses the economic thresholds currently recommended for boll weevil control and how they have been determined. It takes advantage of a newly developed procedure to calculate “economically optimal” economic thresholds that maximize the returns to the farmer’s investment in pest control.

Accomplishments: One undergraduate and one M.S. student have been involved in this project. Accomplishments to date include an extensive literature review, conducting the experiment, compiling the data and estimating the statistical models required for determining the economic threshold. The statistical models have been used to:

- I. Estimated the number of applications required to maintain a given economic threshold, and the corresponding expected costs of control.
- II. Estimate the most likely yields and gross benefits to be obtained under a given economic thresholds
- III. Calculate the profit-maximizing economic threshold for any specific cotton price and pesticide application cost situation.

Funding Generated: No external funding has been generated as a result of this project to date.

Future Plans: To use the statistical models estimated from the experimental data to calculate “economically optimal” economic thresholds under a variety of cotton price and per-application cost scenarios.

Public Dissemination of Results: The results of this project will be presented at and published in the proceedings of the 2001 *Cotton Beltwide Conferences*. An article summarizing the results is being prepared and will be submitted for publication in the *Journal of Cotton Science*.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Standardized Performance Analysis for Cotton Production

Principal Investigators: Phillip Johnson

Source and Amount of Funding: Cotton Inc., \$22,800 (1/99-12/99)

Objectives: The objective of this project is to gather farm level data on the production costs and profitability of cotton production in the Texas High Plains Region.

Description of Project and Significance: The SPA Project is an ongoing project in cooperation with the Texas Agricultural Extension Service. SPA is an integrated production, marketing, and financial analysis program for enhancing farm level decision making. The SPA program analyzes the whole farm financial performance of an agricultural operation using accrual adjusted financial statements constructed from the farm's records. In addition to the whole farm analysis, the SPA program also compiles an analysis of the individual crop enterprises within the farming operation. This includes an analysis of total crop production, unit cost of production and profitability of the crop enterprises. The information from the crop enterprise analysis is then further broken down into a sub-enterprise analysis, which focuses on the performance of specific farms or fields within each crop enterprise.

Accomplishments: A computer program to perform the multi-enterprise SPA analysis was developed and field tested. The SPA program has been used to analyze cotton-farming operations in the Texas High Plains Region for the crop years 1995, 1996, 1997, 1998 and 1999. A database program has been developed and used to compile the analysis for the 1995, 1996 and 1997 crop years. The database program provides total business financial reports that summarize the whole farm financial situation and "report cards" for individual enterprise observations. The report card gives a producer information for each enterprise observation on their farm in comparison with the average of all observations for that type of enterprise and crop year.

Currently, there are a Research Assistant and two student assistants working on the project, with responsibilities of working with participants to complete their analysis.

Funding Generated: This research led to funding from the PROFIT program.

Future Plans: Collection of costs and profitability information on different production practices, such as tillage practices (conventional vs. reduced tillage), cropping systems (ultra narrow row) and biotechnologies (Bt and roundup ready).

Public Dissemination of Results: Several papers have been presented at the Beltwide Cotton Conferences in the past several years.

RESEARCH PROJECT PROGRESS REPORT, 1999/00

Title: Textile Manufacturers' Pricing of Cotton Quality Attributes

Principal Investigator: Don Ethridge

Source and Amount of Funding: Cotton Economics Research Institute (\$2,000 for Sept. 1999-Aug. 2000); and Cotton Inc., \$14,000 (1/00-12/00)

Objectives: To identify market premiums and discounts paid for cotton fiber attributes by U.S. textile manufacturers.

Description of Project and Significance: Data on contracted purchases of cotton by textile manufacturers are collected from textile manufacturers; all data are *bona fide* market transactions. The data are collected twice each year and compiled into a pooled data set, which represents a large sample of transactions across that market spectrum. Hedonic price analysis is used to estimate the market premium and discount structure for the various HVI quality attributes of cotton, by region of origin of the cotton.

Comparison of results across regions gives producers and other market participants in each region from the end-users' perspective. This information is important for the efficient functioning of the cotton marketing system; knowledge of how the end-users of cotton value the attributes of the cotton affects all of the other market segments—merchants, ginners, and farmers. These market signals must be analyzed and reported for the industry to have the information because the complex premiums and discounts are not directly observable in the marketplace.

Accomplishments: Updates of the large and complex data set from cooperating firms was done twice during the year. Estimates of premiums and discounts were done for 1999, with results reported at the 2000 Beltwide Cotton Conferences. Work continues, in cooperation with the Cotton Incorporated EFS system, to computerize the data gathering and reporting of results. The data and models are being organized to facilitate a study of the changes in price structures over time.

Funding Generated: Special Item funding was used to secure funding from Cotton Incorporated.

Future Plans: To continue collecting data from cooperators, updating the premium/discount estimates, and to determine the causes of price differences across regions and through time. Results of the analyses are being posted on the Cotton Economics Research Institute website and are updated each six months.

Public Dissemination of Results: Results were presented at the Beltwide Cotton Conferences in 2000. All research results are provided to the Texas Agricultural Extension Service as they are generated so that they can be made available to the public and the cotton industry through their educational system.

APPENDIX C

SUMMARY OF COTTON ECONOMICS

RESEARCH FUNDING

1999/00

Research Funding

APPENDIX D
PUBLISHED OUTPUT RELATED
TO COTTON ECONOMICS
1999/00

PUBLICATIONS ON COTTON ECONOMICS
September 1999 – August 2000

Department of Agricultural and Applied Economics
Texas Tech University

JOURNAL ARTICLES

Bondurant, J. and S. Misra. "The Role of Product and Market Characteristics in Determining Cottonseed Prices." *Agribusiness: An international Journal*, 16(2000): 357-366.

Elms, M., C. Green, and P. Johnson. "Variability of Cotton Yield and Quality." *Communications in Soil Science and Plant Analysis*, (2000): In Press.

Hudson, D., and D. Ethridge. "Competitiveness of U.S. Agricultural Commodities: Expanding Our View." *American Journal of Agricultural Economics*, (2000): In Press. (Also given as a Principal Paper of the AAEA meetings, Tampa, FL, August 2, 2000)

Hudson, D., and D. Ethridge. "Income Distribution Impacts of Trade Policies in a Multi-Market Framework: A Case in Pakistan." *Journal of Agricultural and Applied Economics*, 32(1, April 2000): 49-61.

Johnson, P., and K. Durham. "Financial Viability and Profitability in the Texas High Plains after the FAIR Act." *Journal of Cotton Science*, 3(1999): 45-52.

Johnson, P., A. Gerbolini, D. Ethridge, C. Britton, and D. Uekert. "Economics of Redberry Juniper Control in the Texas Rolling Plains." *Journal of Range Management*, 52(Nov. 1999): 569-574.

Middleton, M., P. Johnson, and E. Segarra. "Economic Impacts of Plant Biotechnology in the Northern Plains Region of Texas." *Texas Journal of Agriculture & Natural Resources*, 12(1999): 62-79.

Misra, S., B. McPeck, and E. Segarra. "Optimal Structure of the Ginning Industry in the Southern High Plains of Texas." *Review of Agricultural Economics*, 22(2000): 120-33.

Nelson, J., S. Misra, B. Bennett, and G. Barker. "Gin Lint Cleaning to Maximize Producer Net Returns Revisited." *Applied Engineering Journal*, 15(1999): 621-26.

Nelson, J., S. Misra, and A. Brashears. "Costs Associated with Alternative Cotton Stripper-Harvesting Systems in Texas." *Journal of Cotton Science*, 4(No. 2, 2000): 70-78. (Located on World Wide Web at: <http://www.jcotsci.org/toc.html>).

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Ramirez, O. "Parametric Modeling and Simulation of Joint Price-Production Distributions Under Non-Normality, Autocorrelation and Heteroskedasticity: A Tool for Assessing Risk in Agriculture. *Journal of Agricultural and Applied Economics*, (August 2000): In Press.

PROCEEDINGS PAPERS

Bennett, B., and S. Misra. "Inter-Sectoral Relationships in the Texas Cotton Industry." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 323-328.

Chakraborty, K., D. Ethridge, and S. Misra. "How Different Attributes Contribute to the Price of Cotton." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 374-377.

Chakraborty, K., K. Hoelscher, S. Misra, and D. Ethridge. "Texas-Oklahoma Producer Cotton Market Summary: 1998/99." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 329-332.

Elam, Emmett. "Seed Selection: A Researcher's Perspective on Cottonseed Quality, Profits, and Variety Selection." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 21.

Elam, Emmett. "A Marketing Strategy for Cotton Producers Based on Mean Reversion in Cotton Futures Prices." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 310-313.

Ethridge, D., S. Swink, and K. Chakraborty. "Cotton Quality Price Differentials from Textile Mills." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 355-360.

Hoelscher, K., K. Chakraborty, S. Misra, and D. Ethridge. "An Estimated 1999 Crop Pre-Season Price Schedule for the Texas and Oklahoma Cotton Markets." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 377-379.

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White, K., D. Beaty, and P. Johnson. "Roundup Ready Versus Conventional Cotton Varieties: Case Studies from the Southern High Plains of Texas." *2000 Beltwide Cotton Conference Proceedings*, National Cotton Council, San Antonio, TX: 334-337.

Willis, D., and O. Ramirez. "Trends in Cotton Yields and Yield Variability in the Texas High Plains: An Irrigated vs. Dryland Comparison." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 364-369.

Yu, M., E. Segarra, H. Li, R. Lascano, C. Chilcutt, L. Wilson, K. Bronson, and S. Searcy. "The Economics of Precision Agricultural Practices in Cotton Production." *2000 Beltwide Cotton Conferences Proceedings*, National Cotton Council, San Antonio, TX: 369-374.

ABSTRACTS

Arabiyat, T., and E. Segarra. "Technology Adoption and Agricultural Sustainability: Implications for Ground Water Conservation." *International Association of Agricultural Economics, Occasional Paper No. 9(2000): In Press.*

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Allen, V., *et al.* "Sustainable Crop/Livestock Systems in the Texas High Plains." Annual Report submitted to the Southern Region SARE/ACE Program, United States Department of Agriculture, under project number LS97-82, 21 pgs., Texas Tech University, College of Agricultural Sciences and Natural Resources.

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Chakraborty, K., K. Hoelscher, S. Misra, and D. Ethridge. "Texas-Oklahoma Producer Cotton Market Summary: 1998/99." Texas Tech University, College of Agricultural Sciences and Natural Resources publication No. CER-99-53, December 1999.

Chakraborty, K., D. Hudson, D. Ethridge, S. Misra, and G. Kar. "An Overview of the Cotton and Textile Industries in India." Texas Tech University, College of Agricultural Sciences and Natural Resources publication No. CER-99-55, December 1999.

Chakraborty, K., S. Misra, and P. Johnson. "Measuring Technical Efficiency and Total Factor Productivity of Cotton Producers in Texas." Texas Tech University, College of Agricultural Sciences and Natural Resources publication No. CER-00-15, May 2000.

Hoelscher, K., K. Chakraborty, S. Misra, and D. Ethridge. "An Estimated 1999 Texas-Oklahoma Pre-Season Price Schedule based on Market History." Texas Tech University, College of Agricultural Sciences and Natural Resources publication No. CER-99-54.

Nelson, J., S. Misra, and A. Brashears. "Cost Comparison of Alternative Stripper and Picker Cotton Harvesting Systems." Texas Tech University, College of Agricultural Sciences and Natural Resources publication No. T-1-532, April 2000.

CHAPTER IN BOOK

Hudson, D., and D. Ethridge. "Cotton." Chapter 8 in *Competitiveness of U.S. Agriculture*, Dale Colyer, et al., eds Binghamton, NY. The Haworth Press 2000.

APPENDIX E

PRESENTATIONS THAT WERE NOT
PUBLISHED IN ANY OTHER OUTLET

1999/00

**PRESENTATIONS THAT WERE NOT
PUBLISHED IN ANY OUTLET
1999/00**

**Department of Agricultural and Applied Economics
Texas Tech University**

Elam, Emmett. "Variety Selection, Cotton Farming Profits, and Cottonseed Quality." Invited member of Seed Selection Panel, "Strategies for Solutions--Economics of New Technologies," Beltwide Cotton Production Conference, San Antonio, TX, Jan. 6, 2000.

Elam, Emmett. "Cotton Variety Selection Model." Presentation made at the 1st Annual Research/Extension Symposium on Cotton Economics, Texas Tech Univ., April 5, 2000.

Ethridge, D. "Case Study: The Ethiopian Cotton and Textile Specter." Presentation to the International Management Workshop. Sponsored by ICASALS, Texas Tech University, May 19, 2000.

Ethridge, D. "Daily Price Estimation System." Presentation at the First Annual Research Extension Symposium. Sponsored by the Cotton Economics research Institute, Texas Tech University, and the Texas Agricultural Extension Service, Lubbock, TX, April 5, 2000.

Ethridge, D. "Regional Agricultural Outlook." Presentation to the golden K Kiwanas Club, Lubbock, TX, May 2, 2000.

Ethridge, D. "Sticky Cotton: The New Contaminant that Threatens an Industry." Presentation to a meeting on Impacting Cotton Production in 2000 and Beyond. Sponsored by Bayer Corporation, Houston, TX, February 29 and March 1, 2000.

Johnson, P. "Standardized Performance Analysis for Cotton Production." Presentation made at the 1st Annual Research/Extension Symposium on Cotton Economics, Texas Tech University, April 5, 2000.

Misra, S. "Daily Price Analysis and Reporting for the Texas-Oklahoma Cotton Market." Presentation at the Cotton Incorporated and Texas State Support Committee Review Meeting, Austin, TX, December 10, 1999.

Misra, S. "Harvesting Cost Calculator: A Web-based Decision Tool." Presentation made at the 1st Annual Research/Extension Symposium on Cotton Economics, Texas Tech University, April 5, 2000.

Segarra, E. "Economic Evaluation of Sustainable Agricultural Production Systems." Texas Tech Farm Field Day, New Deal, TX, October 1, 1999.

Segarra, E. "The Economics of Sustainable Crop/Livestock Systems in the Texas High Plains." Texas Tech Farm, New Deal, TX, August 31, 2000.

APPENDIX F

[COTTON ECONOMICS RESEARCH UPDATE](#)

January 2000, and July 2000 Issues

APPENDIX G

NOTES ON COTTON ECONOMICS RESEARCH

ADVISORY COMMITTEE MEETING

October 8, 1999

APPENDIX H
COTTON ECONOMICS RESEARCH
FACT SHEETS

APPENDIX I

COTTON ECONOMICS RESEARCH

NEWS RELEASES