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"ENSURING QUALITY AND EFFICIENCY IN THE USDA COTTON PROGRAM"

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Abstract

The USDA Cotton Program has initiated improvements in its cotton quality measurement processes to provide better services to its domestic and international customers and to gain their confidence that the quality measurements provided are accurate, reliable, and unbiased. These initiatives include more reviews of the classing office during the classing season by managers in the Program, additional leaf grade studies to respond to customer concerns, increased percentage of cotton classing office samples retested in Quality Assurance, additional automation of the Quality Assurance laboratory, increased focus on safety issues, and development of a strategic five-year plan for the Program. All of these initiatives have resulted in more uniform application of cotton classing procedures among all the offices, improved classification results, opportunities to improve efficiencies and reduce costs, reduction in injuries, and more forward planning for the future of the Cotton Program.

Background

The Cotton Program clearly understands that even though the United States is recognized as a world leader in providing cotton quality measurement data, such data has not been accepted globally. The Program requires established checks and balances to gain endorsement worldwide that its cotton classification system is reliable for acceptance and use in every part of the world. Lastly, technology and the work environment must be conducive to the achievement of both quality and productivity goals and performance standards. To achieve these far reaching goals, the Cotton Program has embarked on several initiatives during the past two years that are enhancing the U.S. classification system.

Quality and Efficiency Measures

Supervisory Reviews of Classing Offices

Standard operating procedure for the Program over the past decade has been to ensure supervisory visits took place in classing offices when a problem or issue arose that required personal attention. In response to personal feedback from customers regarding their perception that some quality measurements, especially manual leaf grades, were being inconsistently applied, Cotton Program management visited all classing offices during the 2002 classing season to address the industry concerns that classing offices were not following acceptable grading practices uniformly across all offices. Supervisory visits to all classing offices to provide oversight and review of administrative practices, classification services, and overall classing office operations have continued through the 2003 crop year. In addition to the Grading Branch visiting each of the twelve classing offices, the Quality Assurance (QA) Branch personnel visited 8-10 offices during the 2002 season. QA and the Associate Deputy Administrator visit offices to give personal instruction and feedback as the need arises.

The outcome of these visits has been a more uniform application of the procedures and policies outlined in standard Cotton Program instructions, immediate feedback to each staff on industry concerns, and an opportunity to determine the knowledge level of Program employees. After the 2002 season, based on the feedback from the supervisory visits, the Program elected to conduct Classification Technology Training (CTT) which would consist of several training modules the first of which was basic classification theory, proper working and maintenance procedures regarding facility mechanics and testing equipment. The training, conducted in 2003, has been a very effective and resourceful tool in assessing the knowledge base of the permanent staff. Continuation of this type of training will guarantee the knowledge transfer of pertinent information that will increase the quality and efficiency level of the cotton classification system.

In-House Leaf Grade Studies

Manual leaf grades continued to receive attention from the industry during the 2002 season. As a means to further ensure accuracy of manual classification, the Cotton Program implemented a program called the "In-House Leaf Study".

Upon reaching the 10% point of the office's estimated classing total, each of the twelve classing offices entered leaf grade and percent area trash content combinations into the Program's mainframe computer in order for the computer to flag for samples meeting those qualifications and its permanent bale identification (PBI) tag to be saved for further review. Samples were saved across each of the shifts operating. Of those saved, a portion were shipped to Quality Assurance (QA) to be reclassed by the staff of trained, veteran classers that also reclass the samples submitted to QA as randomly selected checklot samples. The remaining samples were reclassed in the local classing office by the staff of seasonal classing and shift supervisors who daily provided the oversight, direction and supervision to the local classers assigning manual classification fac-

tors. Results from each offices' internal review was valuable in determining tendencies or biases and also provided internal supervisors much of the same valuable information QA uses in establishing the level and consistency throughout the entire Program.

Based on the effectiveness of the 2002 study, the Program continued the study for the 2003 cotton crop. In addition to saving samples for reclass based on leaf grade and percent area trash, the study was restructured to encompass extraneous matter. These samples are held in the local office and reclassed internally, unless specific lots were requested for shipment to QA. The data was summarized for Grading Branch review. Office Heads and local supervisors have all found these in-house studies to be valuable in maintaining consistency between classers and shifts within an office just as QA uses this type of information to ensure such for the entire USDA grading system.

Increased Checklot Percentage

The Cotton Program utilizes a checklot program to ensure the data being assigned at its twelve cotton classing laboratories is consistent, unbiased and in agreement with established standards through its Quality Assurance Branch (QA). QA carries out programs related to planning, developing, and administering a comprehensive review and evaluation of quality assurance activities to analyze internal office operations and make and implement recommendations based on the review. Samples receiving classification services are randomly flagged by the mainframe computer, saved, verified, and shipped overnight to QA. Upon arrival to QA, these samples are reconditioned and tested on two separate High Volume Instruments (HVI's). The data from the two HVI's is averaged and compared back to the data originally assigned at the classing office. These samples are then submitted to QA classers to determine leaf content and designate any discernable extraneous matter, if applicable. Upon completion of this process, all quality information is combined and the QA record is official for reporting back to the classing office.

Reports are generated showing comparisons between QA tests and the original classing office for each of the 250 HVI's and 300 USDA certified cotton classers. The reports are generated for each office and broken down by shift, instrument type, operator and classer. Other reports show results comparisons for the entire Program. These reports provide sustainment or reproducibility data and inform offices if a bias or tendency exists for each factor assigned. Reports are generated daily for immediate feedback to the offices. Weekly and seasonal reports are available once a week in order for offices to determine if trends exist and ascertain their overall performance. Statistics indicate that the larger the sample pool, the more valuable the data product. The Cotton Program therefore increased the number of samples being submitted to QA for checklot classification in 2003 by an average of 48% over the course of the season. Sustainment or reproducibility data thus far for the 2003 crop demonstrates equivalent or better results for all quality factors. With replicated or improved results for all factors with an increased sample size, Cotton Program Office Heads and users of the data are able to have more confidence in the data assigned.

Automation of the Quality Assurance Laboratory

A key component in increasing the checklot percentage by 48% was the installation and design of a conveyor system for the Quality Assurance laboratory. Historically, all samples tested in Quality Assurance, whether samples submitted for certification class or those submitted as checklots, were handled manually. This included the traying process, delivery to the office's Rapid Conditioning Unit (RCU), movement to two HVI's, and transport to classers to perform manual classification. This process was extremely laborious and lacked in efficiency.

During the spring of 2003, Program engineers designed a four-tier conveyor system to totally automate the handling of cotton samples. This conveyor system was installed in September 2003. Increased productivity was evident as the staff was able to handle the increased percentage of checklots while also classifying two significant futures months totaling over 106,000 bales during peak operations. In addition to being able to classify significant volumes of cotton for such a small operation, cost-savings were greater than anticipated for labor. In October 2002, Quality Assurance employed 23 Production Assistants to operate two shifts. These employees were needed to manually load the RCU, the HVI's, and the classer's work station. In October 2003, while operating two shifts and classing more checklots and futures, Quality Assurance employed only 8 Production Assistants (4 per shift). This is a labor reduction of 65%.

The addition of the conveyor system allows QA to be more efficient in labor and production, especially after the checklot percentage was increased. The new equipment reduces the amount of manual movement and especially physical handling that is necessary while ensuring that all 12 offices receive their data comparison results quickly to make any corrective measures. Reduced handling equates to reduced human error and should result in more reliable procedures. The new conveyor system was integral in 2003 in ensuring quality and efficiency in the Cotton Program for QA checklots and futures and is expected to continue to do so in the future.

Program Safety Initiatives

Over the past few years, the Cotton Program has taken a more concerted effort to improve its safety record. The Program has made modifications to various types of equipment to reduce the opportunity where an accident can take place; continued to acknowledge staffs and offices who operate for a rating year with 'zero' accidents; recognized its offices showing the largest

improvement regarding the number of accidents; provided more thorough instruction to offices to ensure when accidents happen that the proper procedures take place; organized and tasked a Safety Committee to concentrate their energies on safety issues; conducted Safety Inspections of its offices; begun a project with the Agency's Training Institute to develop a safety video to better train our new employees and provide our veteran employees with refresher materials; and held a Program-wide safety slogan contest.

Program success in these efforts is demonstrated by the reduction in accidents from the 2000 season to the 2002 season from 73 accidents to 45 accidents to 28 accidents over a three-year period of time. This is a decrease of 61% in two years. Cotton views the importance of improving safety as a high priority. Reduction in accidents improves efficiency due to deceased downtime and time loss from work. Proper training and operation of the equipment puts the Program in a position to provide more accurate data. In addition to the employee's having fewer injuries due to proper equipment operation, the Program ensures the data assigned is as accurate as today's technology will allow.

Strategic Planning

In 2002, the Program embarked upon the task of developing and implementing a new Strategic Plan. The plan followed Presidential Initiative guidelines and was designed to apply specifically to Cotton Program and industry goals and objectives. The first step in developing a new strategic plan was to re-examine the Program's mission statement. After thorough examination from representatives of all Program departments, a new mission statement resulted:

> *The mission of the Cotton Program is to support the orderly and efficient marketing of U.S. cotton, domestically and internationally, by providing unbiased classification, standardization, market news, and oversight of the research and promotion program.*

The Strategic Plan consists of five primary goals set for the Cotton Program. These are:

1. Promote and Ensure High Quality
2. Maximize Program Efficiency and Financial Stability
3. Promote Domestic and International Awareness
4. Expand and Promote Effective Utilization of Information Technology
5. Utilize Resources Effectively, Optimize Staffing and Provide Valuable Training

Each goal identified priorities for certain activities and projects that will receive the time and resources to accomplish. Meeting these goals will require teamwork and an expanded vision that encompasses the overall mission of the Program. Existing practices and procedures are being evaluated with the ultimate goal of maximizing efficiency of resources to continue or initiate projects that will best accomplish these goals. Expected benefits of from the Strategic Plan include: clearly defining the purpose of the Program while establishing realistic goals and objectives consistent with our mission in a defined time frame; communicating these goals and objectives to the Program's constituents; developing a sense of ownership of the plan; ensuring the most effective use of Program resources; and providing a base for which progress can be measured and establishing a mechanism for informed change when needed.

Conclusion

Supervisory reviews of classing offices, in-house leaf grade studies, an increase in the checklot percentage, automation of the QA laboratory, Program safety initiatives, and Strategic Planning are only a few of the measures the Program has taken in the past couple of years to continue to meet the objective of ensuring quality and efficiency throughout operations. Throughout the history of the organization, the USDA Cotton Program has diligently worked to bring the reliability, effectiveness and efficiency of cotton quality evaluation to the point where the U.S. cotton classing system enjoys the reputation it does today. The Program realizes that its efforts must continue to demonstrate leadership, proactively address the concerns and issues facing the industry, and place the Program in a position to remain a viable participant in future developments facing the global cotton industry.