THE CLASSIFICATION OF COTTON

Contents

I. Introduction

In 1907, an international group of cotton industry representatives met in Atlanta, Georgia, to address serious problems that had developed in the marketing of cotton. A resolution was passed which recommended the establishment of uniform cotton standards to "eliminate price differences between markets, provide a means of settling disputes, make the farmer more cognizant of the value of his product, and, therefore, put him in a better bargaining position, and in general be of great benefit to the cotton trade." In response to this and similar calls for action over the next several years, laws were passed authorizing the United States Department of Agriculture (USDA) to develop cotton grade standards and offer cotton classification services. Under the authority of the U.S. Cotton Statistics and Estimates Act of 1927, the U.S. Cotton Standards Act of 1923, and the U.S. Cotton Futures Act of 1914, USDA implemented a classification system. Thus began an industry-government relationship that remains strong and viable to this day. This long-standing partnership demonstrates how government and industry can work together, each respectful of the other's role, to produce continuing beneficial results for the nation and for its customers abroad.

II. Overview

The Nature of Cotton

Botanically, three principal groups of cotton are of commercial importance. The first, the species *Gossypium hirsutum,* is native to Mexico and Central America and has been developed for extensive use in the United States, accounting for more than ninety-five percent of U.S. production. This group is known in the United States as "American Upland" cotton and has fibers that range in length from about ⅞ to 1 5/16 inches. The second botanical group, the species *G. barbadense,* which makes up the balance of U.S. production, is of early South American origin. With fibers ranging in length from 1¼ inches to 1 9/16 inches, it is known in the United States as "American Pima" cotton, also commonly referred to as "Extra-Long Staple" cotton. A third group, *G. herbaceum* and *G. arboreum,* consists of cottons with shorter fiber lengths, ½ to 1 inch, that are native to India and Eastern Asia. No cottons from this group are grown in the United States.

A single pound of cotton may contain 100 million or more individual fibers. Each fiber is an outgrowth of a single cell that develops in the surface layer of the cotton seed. During early stages of its growth, the fiber elongates to its full length as a thin-walled tube. As it matures, the fiber wall is thickened by deposits of cellulose inside the tube, leaving a hollow area in the center. When the growth period ends and the living material dies, the fiber collapses and twists about its own axis.

Classification

The term "cotton classification" in this publication refers to the application of official standards and standardized procedures developed by USDA for measuring those physical attributes of raw cotton that affect the quality of the finished product and/or manufacturing efficiency. USDA's classing methodology is based on both grade and instrument standards used hand-in-hand with state-of-the-art methods and equipment to provide the cotton industry with the best possible information on cotton quality for marketing and processing. USDA classification currently consists of determinations of fiber length, length uniformity, fiber strength, micronaire, color, trash, leaf, and extraneous matter.

USDA's classing methodology is based on both grade and instrument standards used hand-in-hand with state-of-the-art methods and equipment.

The system is rapidly moving from reliance on the human senses to the use of high-volume, precision instruments that perform quality measurements in a matter of seconds. Only the classifications for extraneous matter and special conditions are still performed manually. Research and development continue for the technology and instrumentation to rapidly measure extraneous matter, as well as other important fiber characteristics, such as maturity, stickiness, short-fiber content, and neps. USDA will complete the transition to an all-instrument classification as quickly as the technology can be developed and instruments are sufficiently refined to assure representative and reliable quality measurements.

USDA classers identify whether any extraneous matter is present.

Structure

USDA provides cotton classification services under the direction of the Agricultural Marketing Service (AMS) Cotton and Tobacco Program. The Program has eight main areas of operation: the Grading Division, the Standardization and Engineering Division, the Quality Assurance Division, the Market News Division, the Information Technology Division, the Research and Promotion Staff, the Administrative Staff, and the Program Appraisal Staff. Each area of operation plays an integral role in maintaining a reliable, efficient, and effective classification system and delivery of services.

Scope

Practically all cotton grown in the United States is classed by USDA at the request of producers. Although classification is not mandatory, growers generally find it essential to marketing their crop and for participation in the USDA price support program. The USDA AMS Cotton and Tobacco Program operates ten cotton classing facilities across the Cotton Belt (their locations are shown on the map on the inside back cover of this booklet). These facilities, which are part of the

Grading Division, are designed specifically for cotton classification and are staffed exclusively with USDA personnel.

USDA also classes all cotton tendered for delivery on futures contracts on the Intercontinental Exchange and provides arbitration classing to the industry. These services are performed by the Quality Assurance Division. Classification services are also provided to individual buyers, manufacturers, breeders, researchers, and others upon request. All users of USDA classification services are charged fees to recover classification costs.

Process

At the gin, cotton fibers are separated from the seed, cleaned to remove plant residue and other foreign material, and pressed into bales of approximately 500 pounds. A sample of at least 4 ounces (115 grams) is taken from each side of the bale by a licensed sampling agent and identified with a Permanent Bale Identification (PBI) tag. The total 8-ounce (230-gram) sample is delivered by the agent or a designated hauler to the USDA classing facility serving the area. Gin and warehouse operators serve as licensed sampling agents and perform this function under USDA supervision.

The gin stand separates the cotton fibers from the seed.

Upon arrival at the classing facility, the samples are conditioned to bring the moisture content into a specified range before the classing process begins. The samples are then transported to the instrument-testing and manual-classing stations, where classification is performed. Remnants of the samples used during the classification process are baled and sold by USDA, with the proceeds applied to offset classification costs.

A 4-ounce sample is taken from each side of the bale by a licensed sampling agent and forwarded to USDA for classification.

Samples are collected and delivered to the USDA classing facility serving the area.

Once classification is complete, the fiber measurement results are immediately available to the customer from the classing facility's database. Providing cotton quality results quickly gives producers and buyers access to crucial information at the time of sale. At the peak of the season, USDA classes and provides data on as many as two million bales per week nationwide.

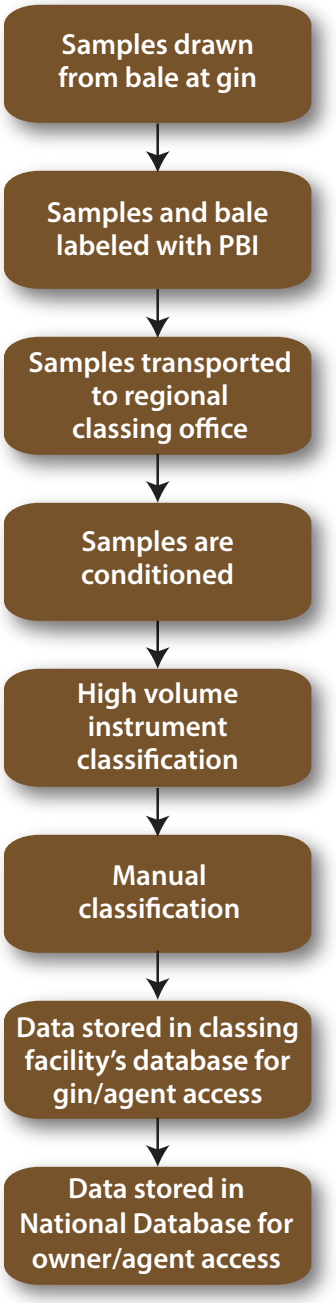
Tracking

The PBI system allows cotton to be tracked from the field to the classing office. On the field, each cotton module is labeled with an identification number that links it to the producer, field, and seed variety. At the gin, each module identification number is logged into a database, and each bale is labeled with a PBI tag with a twelve-digit number and barcode identifying the classing office, gin, and bale. Samples taken at the gin for classing also are labeled with PBI tags.

At the classing office, the PBI tag follows the sample through testing. The results are linked to the bale and stored in the USDA AMS Cotton and Tobacco Program's National Database by PBI number. The classification data in the National Database can be accessed by the owner of the cotton or the owner's authorized agent. Users of this system include grower marketing cooperatives, buyers, and textile manufacturers.

PBI tag: The first two digits of the gin code identify the classing office, followed by three digits identifying the gin. The remaining seven digits identify the bale.

Overview of the Cotton Classification Process



III. Maintaining Official Standards for Classification

To maintain the integrity of the USDA classification system, official standards and standardized procedures have been developed and used throughout the progression of the classification system. Official standards are maintained and provided by the Cotton and Tobacco Program's Standardization and Engineering Division. USDA maintains two basic types of standards for cotton classification: grade standards and instrument standards. For information on purchasing cotton classification standards, contact USDA at cotton.standards@ams.usda.gov.

Grade Standards

Grade standards are used for manual classification. They specify levels of color and leaf for various grade designations. USDA maintains two types of grade standards: Universal Upland Grade Standards and American Pima Grade Standards. USDA's American Upland cotton standards are referred to as "Universal" standards because they have been adopted by a special governing body and are recognized and used internationally.

USDA has twenty-five official color grades for American Upland cotton and five categories of below-grade color, as shown in the table below. USDA maintains fifteen physical grade standards for American Upland cotton. Seven of the White color grade standards also serve as official leaf grade standards for American Upland cotton. The remaining grades are descriptive.

Official grades of American Upland cotton (effective 1993)

	White	Light spotted	Spotted	Tinged	Yellow stained
Good middling	11-1*	12	13	–	–
Strict middling	21-2*	22	23**	24	25
Middling	31-3*	32	33**	34**	35
Strict low middling	41-4*	42	43**	44**	–
Low middling	51-5*	52	53**	54**	–
Strict good ordinary	61-6*	62	63**	–	–
Good ordinary	71-7*	–	–	–	–
Below grade	81	82	83	84	85

*Physical standards for color grade and leaf grade.
**Physical standards for color grade only.
All others are descriptive.

For the classification of American Pima cotton, USDA has six official grades for color and leaf, all of which are represented by physical standards. There is also a descriptive standard for cotton that is below grade for color or leaf.

Both Universal Upland and American Pima Grade Standards are valid for only one year, because of gradual changes in color as cotton ages. Grade standards for both American Upland and American Pima cotton are reviewed periodically to ensure that they are still representative of the U.S. crop. If at some point all segments of the U.S. cotton industry agree that the standards are no longer representative of the crop, special measures must be taken to review and amend the standards.

USDA maintains fifteen physical Upland Grade Standards and six physical American Pima Grade Standards.

Instrument Standards

Instrument standards are cottons used for instrument calibration and verification. These standards include Universal HVI Calibration cotton, Extra-Long Staple (ELS) Calibration cotton, Universal HVI Micronaire Calibration cotton, and Universal HVI Cotton Color and Cotton Trash Standards. These standards serve the USDA and most cotton organizations worldwide as the basis for instrument cotton classification.

Examples of Universal Color Standards and Micronaire Standards for high volume instrument calibration.

Cotton selected for use in instrument calibration must pass rigorous screening procedures. As a first step, USDA conducts an extensive search in the National Database for uniform lots of cotton from the current crop that have fiber properties appropriate for their intended use. Candidate bales are purchased from producers and retested through a rigorous value-establishment process to determine whether they meet the strict certification requirements set for calibration cotton.

Establishing Values for Calibration Cotton

In addition to bale uniformity requirements, each bale must meet the length and strength criteria for its intended use. For example, an Upland long/strong calibration cotton bale must have approximate length and strength values of 1.15 to 1.22 inches and 32 to 36 grams per tex, while an Upland short/weak calibration cotton bale must have length and strength values below 1.01 inches and 23 to 26 grams per tex.

Currently, seven laboratories work together to establish values for calibration cottons, including five USDA facilities, one independent laboratory in the U.S. research community, and one well-established international laboratory. The independent U.S. and international laboratories are required to operate under the same rigid specifications as USDA facilities to participate in the value-establishment process.

Cumulatively, the laboratories perform at least 120 tests per bale over a two-day testing period. The results are used to further evaluate uniformity and to determine the values assigned to the calibration cottons. For reference purposes, samples of previously established, or "benchmark," calibration cottons are included in the testing, along with samples from candidate bales. These benchmark cottons provide reference points to assure the continuity of testing levels over time. If test results within a bale are outside of the prescribed limits, the bale is rejected. If all testing criteria are met, the bale is accepted, and its contents are packaged for distribution as calibration cotton.

IV. Classification of Upland Cotton

Measurements for fiber length, length uniformity, fiber strength, micronaire, color grade, trash, and leaf grade are performed by precise High Volume Instruments, in a process commonly referred to as "high volume instrument classification." Only extraneous matter and special conditions are still officially classified by the traditional method of classer determination.

Fiber Length

Fiber length is the average length of the longer half of the fibers (upper-half mean length). It is reported in both 100ths and 32nds of an inch (see the conversion chart below). Fiber length is measured by passing a "beard" of parallel fibers through an optical sensing point. The beard is formed when fibers from a sample of cotton are automatically grasped by a clamp, then combed and brushed into parallel orientation.

Upland cotton fiber length conversion

Inches	32nds	Inches	32nds
0.79 & shorter	24	1.11–1.13	36
0.80–0.85	26	1.14–1.17	37
0.86–0.89	28	1.18–1.20	38
0.90–0.92	29	1.21–1.23	39
0.93–0.95	30	1.24–1.26	40
0.96–0.98	31	1.27–1.29	41
0.99–1.01	32	1.30–1.32	42
1.02–1.04	33	1.33–1.35	43
1.05–1.07	34	1.36 & longer	44 & longer
1.08–1.10	35		

Fiber length is largely influenced by variety, but the cotton plant's exposure to extreme temperatures, water stress, or nutrient deficiencies may result in shorter fibers. Excessive cleaning or drying at the gin may also result in shorter fibers. Fiber length affects yarn strength, yarn evenness, and the efficiency of the spinning process. The fineness of the yarn that can be successfully produced from given fibers also is influenced by fiber length.

Length Uniformity

Length uniformity is the ratio between the mean length and the upper-half mean length of the fibers, expressed as a percentage. If all of the fibers in the bale were the same length, the mean length and the upper-half mean length would be the same, and the uniformity would

be 100 percent. However, because of natural variation in the length of cotton fibers, length uniformity will always be less than 100 percent. The table below is a guide to interpreting length uniformity measurements.

Interpreting length uniformity

Description of degree of uniformity	Length uniformity index (percent)
Very high	above 85
High	83–85
Intermediate	80–82
Low	77–79
Very Low	below 77

Length uniformity affects yarn evenness and strength and the efficiency of the spinning process. It is also related to short-fiber content (content of fibers shorter than ½ inch). Cotton with a low uniformity index is likely to have a high percentage of short fibers. Such cotton may be difficult to process and is likely to produce low-quality yarn.

Fiber Strength

Strength measurements are reported in grams per tex. A tex unit is equal to the weight in grams of 1,000 meters of fiber. Therefore, the strength reported is the force in grams required to break a bundle of fibers one tex unit in size. Strength measurements are made on the same beards of cotton that are used for measuring fiber length. The beard is clamped in two sets of jaws, ⅛ inch apart, and the amount of force required to break the fibers is determined. The table below is a guide to interpreting fiber strength measurements.

Interpreting fiber strength

Description of degree of strength	Strength (grams per tex)
Very Strong	31 & above
Strong	29–30
Average	26–28
Intermediate	24–25
Weak	23 & below

Fiber strength is largely determined by variety. However, it may be affected by plant nutrient deficiencies and weather. Fiber strength and yarn strength are highly correlated. Also, cotton with high fiber strength is more likely to withstand breakage during the manufacturing process.

Fiber length and strength measurements are made on the same "beard" of cotton.

Micronaire

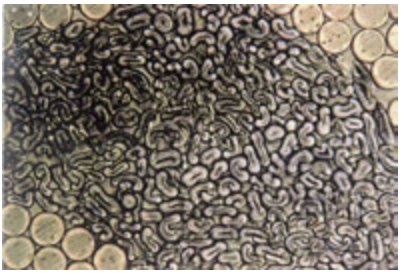
Micronaire is a measure of fiber fineness and maturity. An airflow instrument is used to measure the air permeability of a constant mass of cotton fibers compressed to a fixed volume. The chart below is a guide to interpreting micronaire measurements.

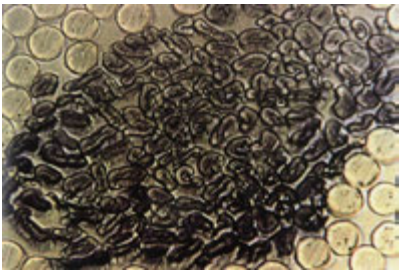
Relationship of micronaire readings to market value				
34 & below	35–36	37–42 Premium range	43–49	50 & above
	Base range			
Discount range				

Micronaire can be influenced during the growing period by environmental conditions such as moisture, temperature, sunlight, plant nutrients, and extremes in plant or boll population. Fiber fineness affects processing performance and the quality of the end product in several ways. In the opening, cleaning, and carding processes, low-micronaire or fine-fiber cottons require slower processing speeds to prevent damage

to the fibers. Yarns made from finer fiber have more fibers per cross-section, which results in stronger yarns. Dye absorbency and retention are affected by the maturity of the fibers; the greater the maturity, the better the absorbency and retention.

Micronaire values are generated through the use of an airflow instrument to measure permeability to air.

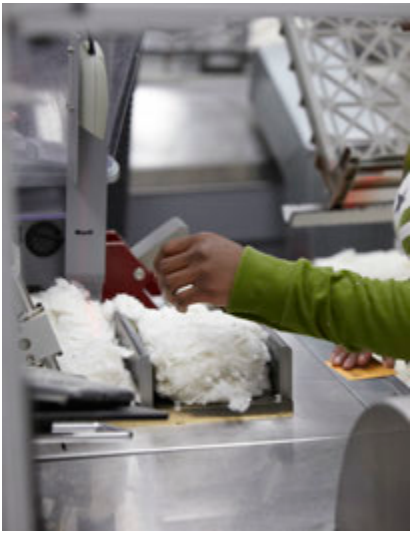




Upland cotton with micronaire of 3.8 (left) and 5.2 (right).

Color Grade

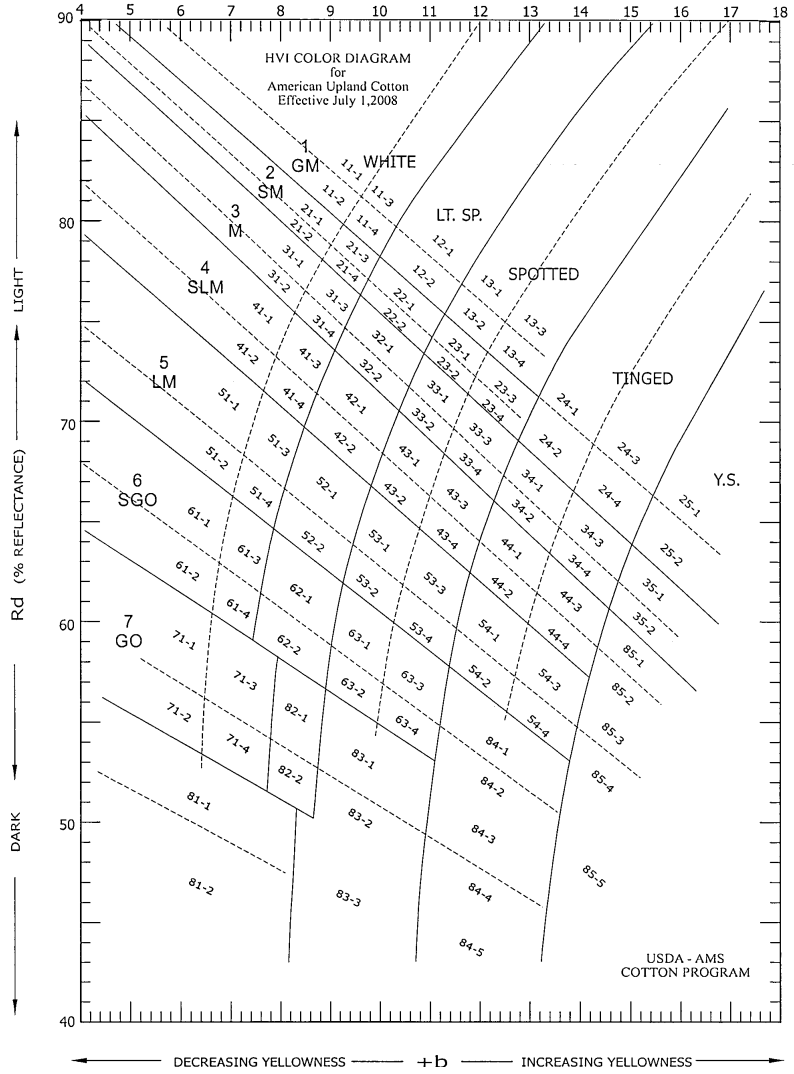
Color grade is determined by the degree of reflectance (Rd) and yellowness (+b) as established by official standards and measured by the high volume instrument. Reflectance indicates how bright or dull a sample is, and yellowness indicates the degree of pigmentation. A three-digit color code is determined by locating the point at which the Rd and +b values intersect on the color chart for American Upland cotton (shown on page 14).



The color of cotton is graded by the high volume instrument.

The color of cotton fibers can be affected by rainfall, freezes, insects, fungi, and staining through contact with soil, grass, or cotton-plant leaf. Color can also be affected by excessive moisture and temperature levels during storage, both before and after ginning. Color deterioration because of environmental conditions affects the fibers' ability to absorb and hold dyes and finishes and is likely to reduce processing efficiency.

HVI COLOR GRADES FOR AMERICAN UPLAND COTTON



Trash

Trash is a measure of the amount of non-lint materials in cotton, such as leaf and bark from the cotton plant. The surface of the cotton sample is scanned by a digital camera, and the digital image is analyzed. The percentage of the surface area occupied by trash particles (percent area) and the number of trash particles visible (particle count) are calculated and reported.

The ratio between percent area of trash and trash particle count is a good indicator of the average particle size in a cotton sample. For instance, a low percent area combined with a high particle count indicates a smaller average particle size than does a high percent area with a low particle count.

A high percent area of trash results in greater textile mill processing waste and lower yarn quality. Small trash particles, or "pepper trash," are highly undesirable, because they are more difficult for the mill to remove from the cotton lint than are larger trash particles.

Leaf Grade

Leaf grade is a measure of the leaf content in cotton. Recent extensive research and development work has resulted in acceptance of instrument leaf grade. Leaf grade is now determined by high volume instrument trash meter percent area and particle count (described above for trash). The leaf grade is calculated from these parameters based on the Universal Upland Grade Standards and American Pima Grade Standards.

Leaf content is affected by plant variety, harvesting methods, and harvesting conditions. The amount of leaf remaining in the lint after ginning depends on the amount present in the cotton before ginning, the amount of cleaning, and the type of cleaning and drying equipment used. Even with the most careful harvesting and ginning methods, a small amount of leaf remains in the cotton lint. From the manufacturing standpoint, leaf content is all waste, and there is a cost factor associated with its removal. Also, small particles cannot always be successfully removed, and these particles may detract from the quality of the finished product.

Extraneous Matter

Extraneous matter is any substance in the cotton other than fiber or leaf. Examples of extraneous matter are bark, grass, spindle twist, seedcoat fragments, dust, oil and plastic. The kind of extraneous matter and an indication of the amount (light or heavy) are noted by the classer as a remark on the classification document.

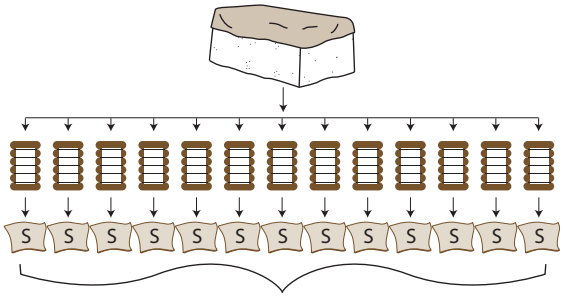
Another factor noted on the classification record under "extraneous matter" is abnormal preparation. "Preparation," or "prep," describes the degree of smoothness or roughness of the ginned cotton lint. Various methods of harvesting, handling, and ginning cotton produce differences in roughness or smoothness of preparation that sometimes are quite apparent. Abnormal preparation of Upland cotton has greatly decreased in recent years as a result of improved harvesting and ginning practices, and now occurs in less than half of one percent of the crop.

Module Averaging

Module averaging is a voluntary program offered since 1991 to Cotton Program customers at no additional charge. It is a method to improve the reproducibility of the high volume instrument measurements of cotton strength, length, length uniformity, and micronaire. Improved reproducibility and accuracy enhance the value of U.S. cotton classification and allow all parties to trade U.S. cotton with greater confidence in the quality measurements.

Module averaging does not require a new sampling procedure; it uses the measurements made through the current procedure of obtaining a sample from each side of every bale. With module averaging, all of the individual bale measurements of fiber quality within a module or trailer are averaged, and that average value is assigned to every bale in the module. For example, the individual strength readings for all of the bales in the module are added together and divided by the number of bales in the module to determine the module average for strength, and that value is then assigned as the strength reading for each bale in the module unit. This average serves as the final quality measurement value.

Basis for module averaging



V. Classification of American Pima Cotton

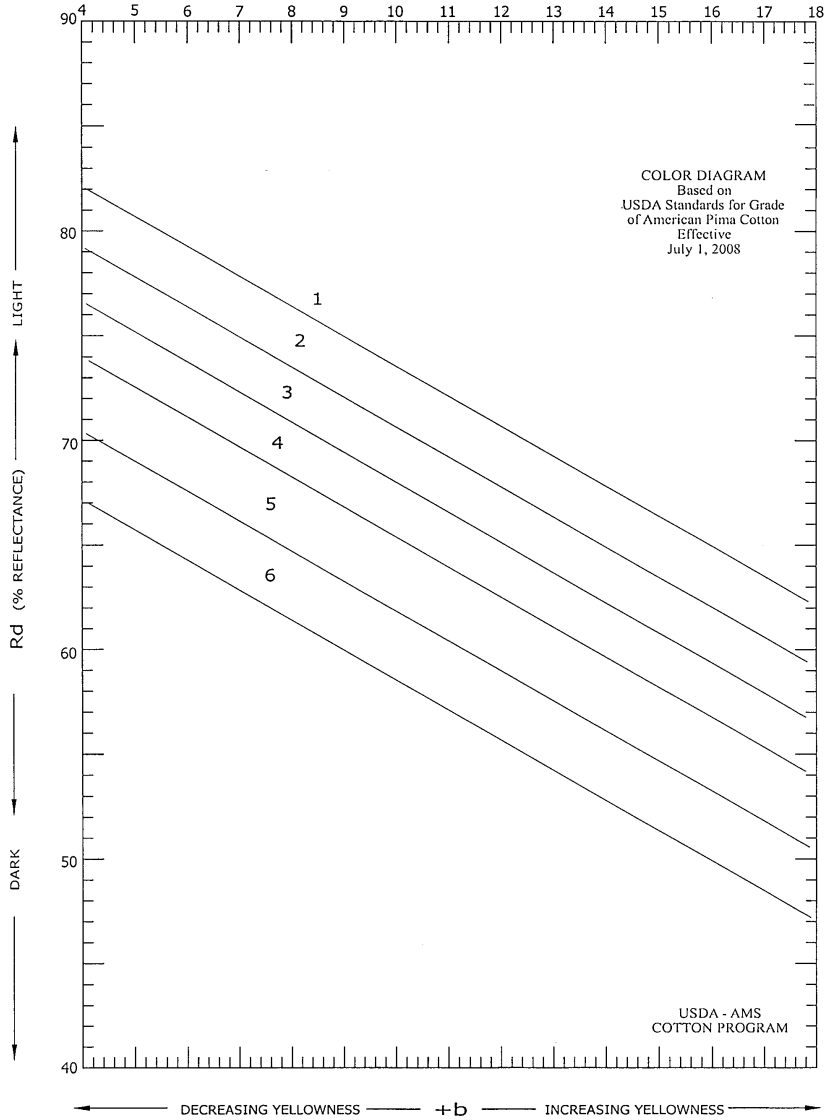
Classification procedures for American Pima cotton are similar to those for American Upland cotton, including the use of high volume instrument measurements. The most significant difference is that the American Pima color grade chart differs from the American Upland color grade chart. Different grade standards are used because American Pima cotton is a deeper yellow than American Upland cotton. The color chart for American Pima cotton is shown on page 18.

In addition, the ginning processes for American Pima cotton and Upland cotton are not the same; Pima cotton is roller ginned, and Upland cotton is saw ginned. Roller ginning results in a less smooth appearance than that obtained with saw ginning. Also, the conversion of fiber length from 100ths to 32nds of an inch differs for American Pima cotton; the conversion chart is shown below.

American Pima fiber length conversion

Inches	32nds
1.20 & lower	40
1.21–1.25	42
1.26–1.31	44
1.32–1.36	46
1.37–1.42	48
1.43–1.47	50
1.48 and above	52

HVI COLOR GRADES FOR AMERICAN PIMA COTTON



VI. Quality and Reliability of Classification Data

Both manual and instrument classification are closely monitored to assure high-quality results. The monitoring of quality is performed mainly through the operations of the Cotton and Tobacco Program's Quality Assurance Division. Several tools and programs are in place to manage quality. These include laboratory conditioning, sample conditioning, equipment performance specifications, instrument calibration, in-house monitoring, and USDA's Quality Management Program.

Laboratory Conditioning

Atmospheric conditions influence the measurement of cotton fiber properties. Therefore, the temperature and humidity of the classing laboratory must be tightly controlled. Temperature is maintained at 70°F plus or minus 1°F (approximately 21°C plus or minus ½°C), and relative humidity is maintained at 65 percent plus or minus 2 percent.

Sample Conditioning

Samples are conditioned to bring the moisture content into equilibrium with the approved atmospheric conditions. Conditioned samples will

Upon arrival at the USDA classing facility, samples are conditioned to standardize moisture content before the classing process begins.

have a moisture content between 6.75 and 8.25 percent (on a dry-weight basis). The conditioned samples are randomly checked to verify that the appropriate moisture content has been reached. Samples may be conditioned passively or actively.

In passive conditioning, the samples are placed in single layers in trays with perforated bottoms to allow free circulation of air. The samples must be exposed to the approved atmosphere until the specified moisture level is reached, which usually takes at least forty-eight hours.

In active conditioning, a Rapid Conditioning unit is used to draw air set at the approved atmospheric conditions through the sample until the required moisture content for high volume instrument testing is attained. Through active conditioning, the time required to condition samples can be reduced to ten minutes.

Equipment Performance Specifications

It is essential to verify that classing equipment meets minimum performance specifications. "Precision" refers to the ability of an instrument to produce the same measurement result time after time. "Accuracy" refers to how well an instrument measures a certain property in relation to its true value.

Newly purchased equipment must pass a series of thorough tests before being accepted and put into operation. Specifications for the delivery of new equipment include the maximum allowable tolerances for precision shown in the table at right.

Equipment precision specifications

Fiber property	Precision
Length (inches)	± 0.012
Uniformity (percent)	± 0.800
Strength (grams per tex)	± 1.000
Micronaire (units)	± 0.100
Color (Rd) (units)	± 0.700
Color (+b) (units)	± 0.300
Trash (percent area)	± 0.040

Furthermore, all instruments are evaluated annually, typically before each cotton season begins. Testing is done to verify both the precision and the accuracy of instrument measurements.

Calibration of Instruments

Instruments are calibrated for fiber length, length uniformity, micronaire, and fiber strength through the use of calibration cottons. Tiles are used to calibrate color and trash measurements. Calibration is performed at regular intervals for each quality factor. USDA calibration tolerances are shown in the table below.

Equipment calibration tolerances

Fiber property	Tolerance
Length (inches)	± 0.007
Uniformity (percent)	± 0.700
Strength (grams per tex)	± 0.500
Micronaire (units)	± 0.100
Color (Rd) (units)	± 0.400
Color (+b) (units)	± 0.400
Trash (percent area)	± 0.050

Quality Management Program

USDA's Quality Management Program (QMP) ensures that all USDA classification facilities across the Cotton Belt provide uniform test results. QMP utilizes a series of known value cottons and tile materials that are tested every two hours to verify cotton measurement levels. Results of the QMP verifications are analyzed and graphed utilizing specialized data analytics programs. Large screen monitors in the classification laboratories display the graphical results in real-time so that technicians can take immediate action if any instrument measurement begins to drift out of calibration. In addition to the two-hour QMP checks, special USDA round test samples are tested weekly to further verify that instrument test levels are consistent between all USDA classification facilities.

VII. Dissemination of Data

USDA Data Dissemination

USDA disseminates data in two formats: (1) official classification information and (2) statistical information regarding quality, volume, and pricing.

Dissemination of classification data is managed by the Cotton and Tobacco Program's Information Technology Division. Cotton classification data are available to ginners or their authorized agents as computer data files or printed documents. Computer-generated requests transmitted via the Internet or by Microsoft Windows telecommunications software give customers immediate access to data upon classification.

The data are then available to subsequent owners of the cotton, primarily merchants and manufacturers, through the Cotton and Tobacco Program's National Database. This database contains classification data for the current crop and the crops for the past four years. Access to classification data is available by computer-generated request, but only to the current owner of the cotton or the owner's authorized agent. For information on obtaining classification data, visit the National Database website at www.ams.usda.gov/cnndb or contact USDA at CottonIT@ams.usda.gov.

The Cotton and Tobacco Program's Market News Division publishes daily, weekly, monthly, and annual reports on crop quality statistics for both Upland and American Pima cotton. The reports include the number of bales classed and the distributions of color grade, leaf grade, staple length, micronaire, fiber strength, length uniformity, extraneous matter, and high volume instrument trash. Quality reports and other Cotton Market News Reports are available on the Internet at http://www.ams.usda.gov/AMSv1.0/cnmnreports. For additional information about Market News publications, contact USDA at CottonMN@ams.usda.gov.

Cotton Incorporated's Cotton Resource Management Tools

Cotton Incorporated's Engineered Fiber Selection® (EFS®) Cotton Management System™ software allows the industry to use cotton classing data to consistently create the best-quality yarn.

MILLNet™ software enables mills to easily manage the natural variables of cotton — micronaire, strength, length, and other high volume instrument properties — to produce consistent and uniform laydowns. As a result, the mill has the potential to produce higher-quality yarn and fabric, reduce overhead costs, and increase productivity with a seamless flow of data from cotton buyers to sellers.

EFS®-USCROP™ software offers cotton buyers a tool to make informed purchasing decisions by providing the data for the entire U.S. crop week-by-week during ginning season. Users have the ability to view the U.S. cotton crop by selecting the specific fiber properties and ranges desired. Knowing what the crop has to offer as a whole will help users make the correct choices when buying cotton.

For more information, contact Cotton Incorporated's Fiber Competition Division.

Cotton Incorporated's Engineered Fiber Selection® software helps mills produce uniform laydowns for high-quality yarns.

The Cotton Belt

USDA, AMS, Cotton and Tobacco Program Classing Facilities

Cotton Incorporated, funded by U.S. cotton producers and importers of cotton and cotton textile products, conducts worldwide research and promotion activities to increase the demand for and profitability of cotton.

Acknowledgments

The United States Department of Agriculture's Agricultural Marketing Service administers programs that facilitate the efficient, fair marketing of U.S. agricultural products, including food, fiber, and specialty crops. The USDA's Agricultural Marketing Service is the primary source of the information contained herein, based on "The Classification of Cotton," Agricultural Handbook 566. This version of the handbook is produced by Cotton Incorporated with permission and assistance from USDA. The USDA Mark is a trademark of the United States Department of Agriculture.

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