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ANALYSIS OF RESEARCH RESULTS ACCORDING TO INTERNATIONAL STANDARDS

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Abstract: This article provides analyses after conducting scientific and practical research on international and universal standards of cotton fiber. And also, methods, definitions and designations of studies are considered, both the class method and the HVI laboratory system. The classification of medium-fiber cotton fiber according to American universal standards is considered.

Keywords: cotton fibre, international standart, result, investigation, analysis, dusty gin, sort, HVI laboratory system, index, quality.

After conducting scientific and practical research on international and universal standards of cotton fiber, the following terms, definitions and designations are used:

Class method – organoleptic evaluation of cotton fiber by grade and class by comparison with the samples of appearance approved in the prescribed manner and determination of the staple length by laying out the staple manually. Instrumentally determine only the index of micronaires. The method is used to control 10% of bales from a batch, but can also be used for bale tests.

HVI (High Volume Instruments) – short designation of the name of the measuring system for testing high-performance cotton fibers in terms of length, uniformity in length, strength, elongation at break, micronaire, color and clogging.

Appearance samples – samples, which are a set of qualitative characteristics of cotton fiber in terms of color, presence of spots, structure and contamination, typical for a particular variety and class of cotton fiber, approved in the prescribed manner. Samples are made separately for long-staple and medium-staple cotton fibers.

Special application methods – traditional instrumental methods for testing cotton fiber on a small sample obtained by repeated averaging and reducing the mass of samples taken from different bales or from different places of the tested sample of cotton fiber. The methods are characterized by high labor intensity and duration of testing, low representativeness of the test sample, and are not used for the purposes of certification of cotton fiber. The methods are used in assessing the quality of raw cotton, in the work of breeders and in the control of technological processes at ginneries and textile enterprises.

Micronaire indicator – Micronare (Mic) – characteristic of fineness and maturity of cotton fiber, determined by the air permeability of a fiber sample (baziz 3.5-4.9).

Upper Half Mean Length (UHM) – the average length of the longest fibers, which are half the length of the fiber under test, expressed in inches or mm.

Staple Length 32-nds (Staple) – the length of the fiber, visually determined by

the classifier from a staple of parallel fibers laid out by him manually, and expressed in 1/32 of an inch (for example, 1 1/32), or in a code equal to the number of intervals of 1/32, in this example - 33.

Mean Length (ML) – the average length of all fibers in the sample.

Uniformity Index (Unf) – a characteristic determined by the ratio of the average fibers to the upper average length, expressed as a percentage.

Short Fiber Index (SFI) – proportion of short fibers in the sample with a length of less than 0.5 inches (12.7 mm), expressed as a percentage.

Reflectance (Rd) – The amount of color reflected by the surface of the tested sample of cotton fiber, expressed as a percentage.

Yellowness (+b) – the degree of yellow component of the color in the test sample.

Trash Code (T) – indicator of contamination with non-fibrous impurities, determined by the area of weed impurities per ten. For example, if the proportion of the area of trash is 0.4%, then the Trash code is 4.

Trash Area (Area) – the total area of weed particles, determined instrumentally on the HVI system by scanning the surface of the sample, expressed as a percentage of the surface area of the tested part of the sample.

Trash Count (Cnt) – the number of individual weed particles in a sample 0.01 inch (0.25 mm) or larger in diameter.

Strength (Str) – the strength of the cotton fiber, expressed in the HVI graduation of the sizing cotton (HVI Calibration Cotton), gf/tex.

Elongation (Elg) – elongation of the fiber by the time it breaks on the HVI dynamometer, expressed as a percentage.

In 2016-2022, a new gin machine (pneumo-mechanical gin) was developed and manufactured to separate the fiber from the seed. We test the obtained fiber samples from the research on the HVI system according to the international standard and analyze the data obtained:

Table 1

Comparative table on ginning of raw cotton and designation of data according to international standards (breeding fiber variety-Porlock-2, I/1)

№	Names and designations according to international standards - ISO.	Obtained data from an existing saw gin (4DP-130). The test was carried out on the system HVI 900 – SA.	Data obtained from the new pneumo-mechanical genie.
	Len –Staple Length 32-nds inch, mm.	1.14	1.22
1.		34.1	36.6
2.	Unf – Length uniformity index, %	84.5	84.8
3.	SFI - Short fiber index, %	7.7	5.2
4.	Mic – Micronaire.	4.2	4.1
5.	Elg –Elongation, %.	7.3	7.7
6.	Str –Strength,gf/tex.	33.3	34.5
7.	Rd – Reflectance, %.	77.5	79.8
8.	+ b – Yellowness.	8.8	6.8
9.	Trash – Trash Code.	3.7	6.0
10.	Cnt –Trash Count.	11	10
11.	Area – Trash Area, %..	0.8	0.6

We analyze the designations and comparative data of Table 1. The names and designations of quality indicators according to international standards on the HVI

laboratory system are given in a very wide range. This can be clearly seen by comparing the data between saw and pneumo-mechanical gins.

In 2009-2019, NamMITI scientists developed and manufactured an innovative, industrial machine "Cotton and textile waste ginner for spinning and cotton ginning".

Table 2

The obtained samples of fibers from cotton waste are tested in the HVI system according to international standards

№	Names and designations according to international standards - ISO.	Fibers from cotton waste		
		Uluk fibers	Fibers from the standard - 3	Fibers from the standard - 7
		The tests were carried out on the HVI system 900-SA		
1.	Len –Staple Length 32-nds.	1.08	1.09	1.12
		32.4	32.7	33.5
2.	Unf – Uniformity Index, %	83.1	83.4	82.9
3.	SFI - Short Fiber Index, %	9.6	9.8	11.7
4.	Mic – Micronaire.	4.4	4.6	4.5
5.	Elg –Elongation, %.	5.8	6.8	6.4
6.	Str –Strength, gf/tex.	32.4	34.2	30.6
7.	Rd –Reflectance, %.	64.6	62.8	60.6
8.	+ b – Yellowness.	10.0	9.8	9.8
9.	Trash – Trash code.	5	6	4
10.	Cnt – Trash Count.	18	20	22
11.	Area –Trash Area, %.	1.8	1.4	1.3

The requirements for varieties and quality of ginning are determined by standard physical samples placed in special classification boxes. Each box contains one variety by color and weediness with six cells, reflecting the possible variations in appearance and color.

Table 3

Classification of medium staple cotton fiber according to international standards – ISO

Variety	Symbol	Code	Availability of standards
White			
Good Middling	GM	11	+
Strict Middling	SM	21	+
Middling	Mid	31	+
Strict Low Middling	SLM	41	+
Low Middling	LM	51	+
Strict Good Ordinary	SGO	61	+
Good Ordinary	GO	71	+
Below Grades	BG	81	-
Light Spotted	GM Lt Sp	12	-
	SM Lt Sp	22	-
	Mid Lt Sp	32	-
	SLM Lt Sp	42	-
	LM Lt Sp	52	-
	SGO Lt Sp	62	-
	BG Lt Sp	82	-

Good Middling			
Strict Middling			
Middling			
Strict Low Middling			
Low Middling			
Strict Good Ordinary			
Below Grades			
Spotted			
Good Middling	GM Sp	13	-
Strict Middling	SM Sp	23	+
Middling	Mid Sp	33	+
Strict Low Middling	SLM Sp	43	+
Low Middling	LM Sp	53	+
Strict Good Ordinary	SGO Sp	63	+
Below Grades	BG Sp	83	-
Tinged			
Strict Middling	SM Tg	24	-
Middling	Mid Tg	34	+
Strict Low Middling	SLM Tg	44	+
Low Middling	LM Tg	54	+
Below Grades	BG Tg	84	-
Yellow Stained			
Strict Middling	SM YS	25	-
Middling	Mid YS	35	-
Below Grades	BG YS	85	-

According to Table 3, the color of the medium staple cotton fiber should be white. Different saturation of yellowness is taken into account when separating cotton fiber into groups by color: White, Light Spotted, Spotted, Tinged и Yellow Stained.

Conclusions.

1. Use of international standards when conducting research requirement period.
2. Applying international standards to research is helping drive up fiber prices on the Liverpool Exchange.
3. The Bremen round of testing requires the international standard of Uzbek cotton in the analysis of results and related work.
4. Fiber classification in price differentiation and quotation requires international standard.

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COTTON FIBER RATING, INNOVATION CURRENT DEVELOPMENTS, PROSPECTS FOR COOPERATION OF FARMS AND CLUSTERS

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Abstract: The article shows the results of six varieties of cotton seed breeding varieties grown by supplying them with high yields with advanced agrotechnical methods, production of high-quality cotton fiber from cultivated raw cotton, introduction of new technologies, as well as the classification of the resulting cotton fiber based on the international universal ISO standard, as well as conducted scientific and practical research in determining the rating place of the fiber.

Key words: raw cotton, fiber, joint, farmer, fiber rating, quality, genie machine, pneumomechanical women, textiles, micronair, research, laboratory system HVI, selection type.

Class method -Today, cotton seeds of many breeding varieties are planted on the territory of the republic. For example, while varieties S 65-24 and Namangan-77 have been widely planted for more than 35 years, such breeding varieties as Andijan-35, Andijan-36, glossy-1, glossy-2, glossy-3, Namangan-34 are relatively new varieties. In addition, our breeders create a large number of breeding varieties, conduct scientific and practical research and conduct pilot work.

Experts of the spinning enterprises of the Kalava cotton textile cluster, as well as other spinning enterprises, pay more attention to such quality indicators as the length of cotton fibers (Len - high average length), microneedles (microfibre maturation and thinness, thickness), as well as the percentage of short fibers in fibers (SFI-short fiber index). This is a true and necessary condition, with special emphasis on the optimal state of the microneedle, which is 4.0, 4.1, 4.2, 4.3,.

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