Management analysis of cotton-fiber quality in cotton gining plants

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Abstract: This article focuses on the analysis of management of quality of cotton fiber on the ginning enterprises of Uzbekistan in the conditions of export-oriented economy.

Keywords: Quality indicators, micronaire, staple length weight, types and grades of raw cotton, budgeting, cotton fiber balance.

Introduction

Cotton products historically determine the level of well-being of society and the economic power of the country that produces it. The demand for cotton fiber in the world is growing all the time. Due to the large volumes of cotton fiber production, the Republic of Uzbekistan is a leading participant in the global cotton industry, ranking sixth in the production of cotton fiber and fifth in its export.

About 3.5 million tons of raw cotton and 1-1.2 million tons of cotton fiber are produced in Uzbekistan annually. Over the past 10 years, domestic consumption of cotton fiber in the country has grown from 15% to 40%.

According to the International Cotton Advisory Committee (ICAC), Uzbekistan in the 2015-2016 season will retain its share of 7%, or about 550 thousand tons, in the global volume of its exports. Bangladesh (29%), China (26%), Korea (7%) and Iran (5%) remain the main buyers of Uzbek cotton. [1.c.1.]

Raw cotton is classified by industrial grades and classes in accordance with the requirements of the State standard UzDST 615 "Raw Cotton. Technical conditions ".

The enterprises of the cotton cleaning industry produce the following types of cotton products:

1. Cotton fiber (varieties "birinchi", "ikkinchi", "uchinchi", "turtinchi" and "beshinchi", classes "oliy", "yakhshi", "orta", "oddiy" and "iflos").

2. Technical cotton seeds (first, second, third and fourth grades, first, second and third classes).

3. Sowing cotton seeds.

4. Lint (first and second grades, classes "oliy", "urta" and "iflos", types "A" and "B")

5. Ulyuk.

6. Down.

In most regions of the Republic, more than 90% of the total volume are classes "Oliy" (Higher) and "Yakhshi" (Good). (Fig-1.)

Raw cotton is produced by cotton-growing farms, in accordance with the established target parameters and is supplied to cotton ginning enterprises in accordance with the concluded contractual agreements. The harvested raw cotton is stored in riots at the factory harvesting points and is consumed as it is processed.

As noted by AI Alikulov: "In the ginning industry, in one production cycle, homogeneous raw cotton is processed and the same type of products are produced" [6, p.15.].

Packaging materials are classified according to their intended use in accordance with the requirements of the State standard UzDST 841 "Cotton fiber, cotton lint and waste from cotton factories containing uluk and fluff. Packaging, labeling, transportation and storage ".
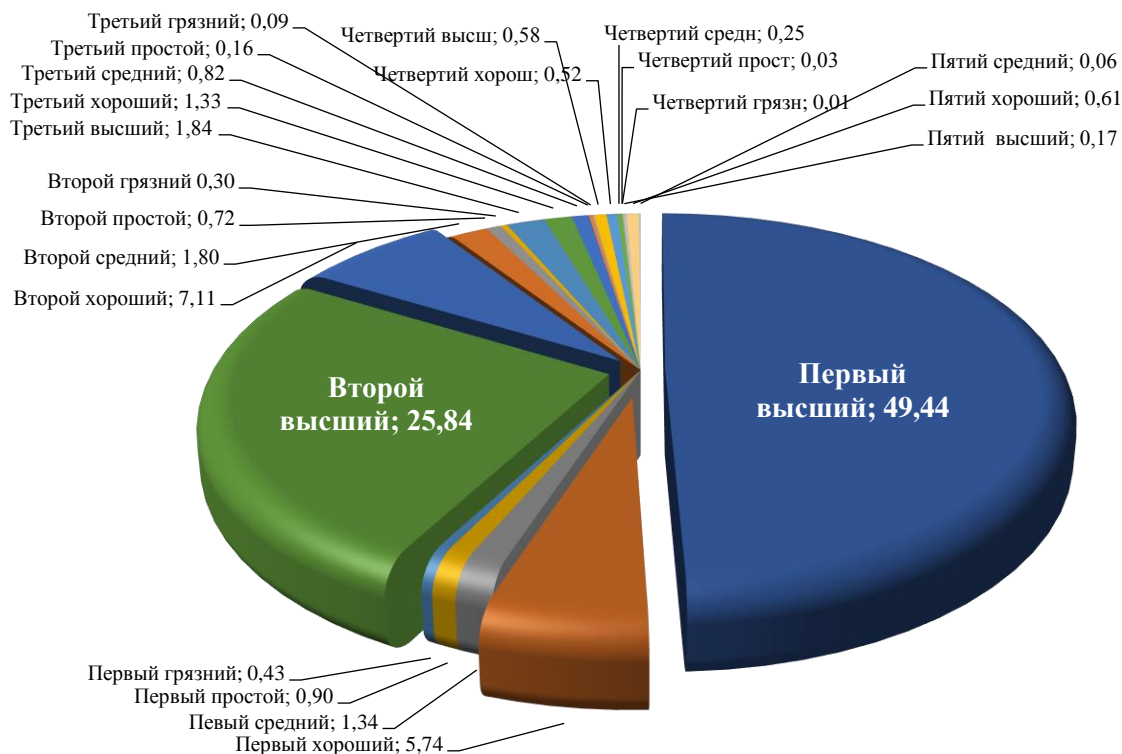
Fig 1. Distribution of the share of fiber output classes [5.c.1.]

Packaging and consumables are produced by enterprises of the republic and purchased by ginneries for production needs in accordance with the procedure established by law, as well as within the framework of agreements concluded on cooperation ties.

A further course towards improving the existing cotton infrastructure and improving the quality of domestic cotton fiber was aimed at continuous improvement of selection varieties, processing of raw cotton, certification of cotton products, storage and transportation. This is the main goal of the reforms carried out in this area.

Modern trends in fiber quality requirements are such that the fiber must satisfy the consumer not only in terms of the main mandatory parameters used in the sale, but also in terms of additional indicators obtained instrumentally on the HVI system.

In Uzbekistan, since 2001, since the introduction of 100% batch tests in the laboratories of the Uzbek center "SIFAT", thanks to the improvement of agricultural technology, the introduction

of new breeding varieties and the use of HVI systems, the share of type 4 cotton fiber has steadily increased.

HVI (HVA) HighVolume Instrument is a short designation of the name of the measuring system for testing high performance cotton fiber in terms of length, uniformity in length, strength, elongation at break, microneir, color and clogging. [6.c.1.]

The share of cotton fiber of type 4 of the 2016 harvest was 85.4% as of December 15, 2016 (Fig-2).
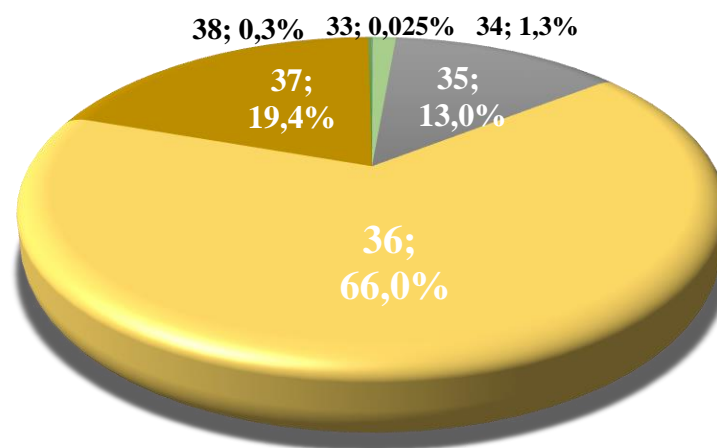

Fig 2. Proportion of type 4 cotton fiber [5.c.2.]

The specific breaking load indicator remains at a high level in all regions of the Republic. On average in the republic, the strength has slightly increased in comparison with the previous season. Diagram of the distribution of the specific breaking load of cotton fiber as of December 15, 2016 79.8% fiber has more than 29 gf / tex
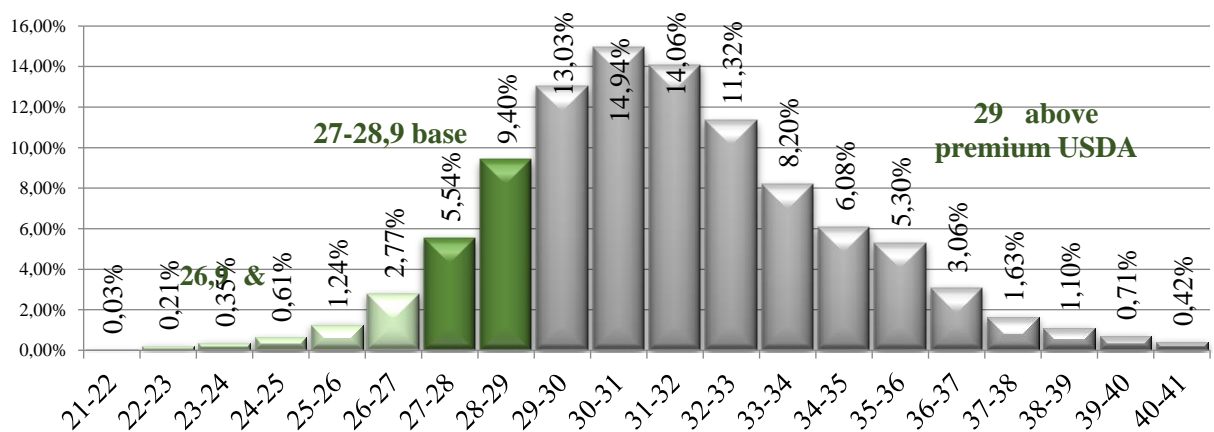
Fig 3.Distribution diagram of the specific breaking load index of cotton fiber [5.c.2.]

The indicator of fiber uniformity along the length as of December 15, 2016, on average in the Republic, is higher than 83-83.5%. In comparison with the previous season, the uniformity of the fiber has significantly increased in the Bukhara region.
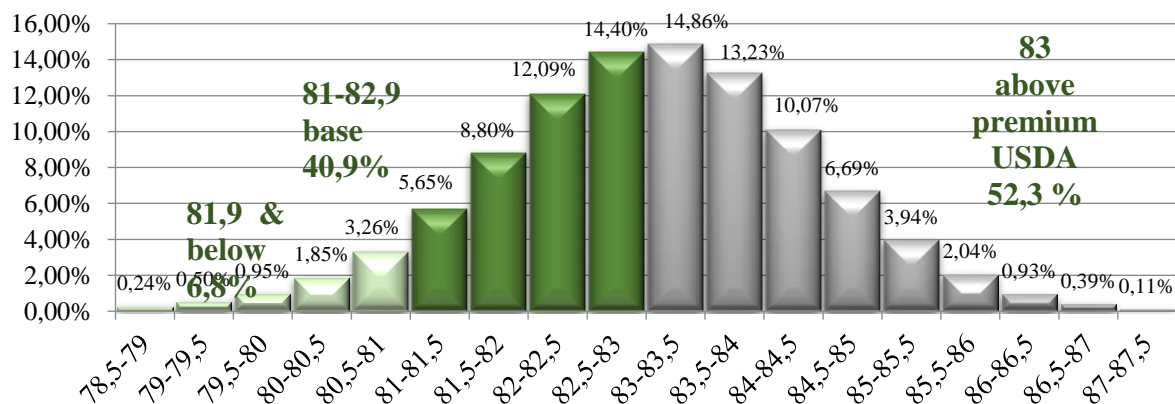

Fig 4. Diagram of the index of uniformity of fiber along the length [5.c.3.]

To classify the quality of cotton fiber, a classroom method is provided - specially trained specialists (classers) carry out an organoleptic assessment of cotton fiber by grade and class by comparing with appearance samples approved in the prescribed manner, and determining the staple length by laying out the staple manually. Only the "microneir" indicator is determined

instrumentally. The method is used to control 10% of bales from a batch, but it can also be used for batch tests.

Figure 5 shows a diagram of the distribution of the microneur indicator of cotton fiber by breeding varieties as of December 15, 2016. On average in the Republic, the microneir indicator is within the optimum 99.7% of the 3.5-4.9 range. [5.c.1.]
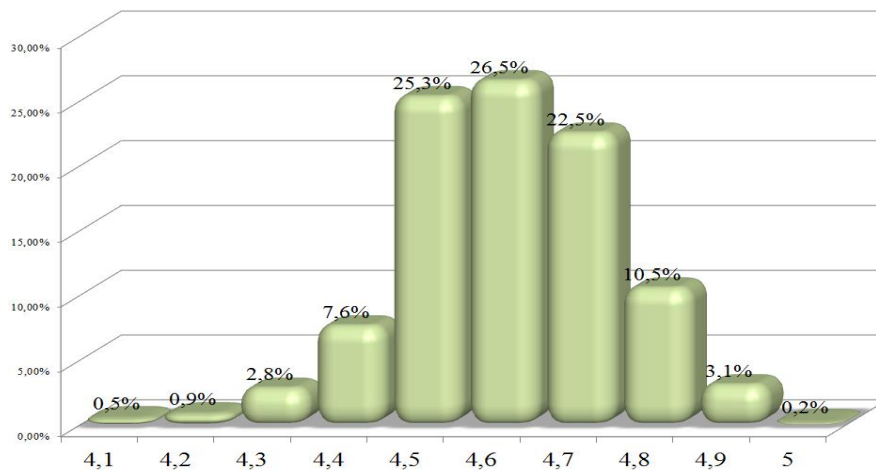

Fig 5. Diagram of the distribution of the indicator of microneir cotton fiber by breeding varieties [5.c.3.]

At ginning enterprises, planning separately compiles the balance of fiber, by-products and related products. The fiber balance is compiled in kind for the reporting year separately for breeding varieties and industrial varieties, including by classes with a distribution by quarters, and has the following form (Table 1).

Table -1. Fiber balance for 1 quarter

№ p.p..	Indicators	Cotton fiber grades					Total by varieties
		I	**II**	**III**	**IV**	**V**	
1.	Balance on January 1	-	60	100	-	-	160
2.	Received from production to warehouse	120	410	104	65	45	744
3.	Sent	120	400	90	50	20	680

4.	Balance on April 1		-	70	114	15	25	224

It should be noted that the budget takes into account each operational period separately, i.e. products from the harvest of last year and the current year.

Conclusions

In general, it should be noted that in the context of the requirements of the world market for cotton fiber, improving the quality and competitiveness of cotton and fat and oil products, attracting investments, including foreign ones, for the modernization, technical and technological re-equipment of cotton ginning and oil and fat enterprises, the role of quality analysis as a source of information ensuring the adoption of optimal management decisions.

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