THE INFLUENCE OF THE NUMBER OF NEPS IN DIFFERENT MIXTURES ON THE QUALITY OF SPUN YARN

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Abstract
In this article, a mixture of newly created cotton varieties was prepared in 3 different variants. The influence of the number of neps in the mixture on yarn quality parameters was studied. According to the results of the conducted research, the yarn produced from the cotton fiber mixture of 1st variant was included in the quality level of 50% in accordance with the international requirements of USTER Statistics 2018.

Key words: fiber, yarn, unevenness, neps, linear density, thick places, knots, hairiness.

Introduction

The share of the textile industry in ensuring the stability of the national economy is large. Cotton fiber is considered the main raw material in the production of textile products and has high positive properties. As the demand for fiber quality increases, the competitiveness of products made from it also increases. Effective and rational use of local raw materials helps to reduce production costs and achieve economic efficiency.

In the development strategy of New Uzbekistan for 2022-2026, by ensuring stable high growth rates in economic sectors, by 2030, the per capita income will increase from 4000 US dollars and creating prerequisites for entering the category “upper middle income countries”. [1].

Studying the physico-mechanical properties of promising new cotton varieties grown in our country and producing competitive products from them serve to fulfill these tasks.

The new cotton varieties created by our scientists are disease-resistant, high-yielding, and mature in a short period of time. These cotton fibers, which have different properties, change their quality indicators in different ways during the spinning process [2]. For this reason, in spinning enterprises, a mixture is developed in optimal options for each selection variety. Because the possibilities of spinning of these selection varieties are also different [3].

Research Methodology

Currently, the physical and mechanical parameters of the fiber are determined using modern measuring systems [4]. We know that the properties of the spun yarn are provided by the properties of the fiber. It is important to analyze all the properties of the fibers in the mixture used in spinning. Today, fiber quality indicators are determined using HVI-1000.

The composition of the mixture, i.e. LOT, is important in a spinning enterprise. The number of unevenness and neps in the obtained thread significantly affects the quality indicator of the finished products obtained from it.

Studying the factors affecting the yarn quality index and properties is an important task in increasing the efficiency of spinning [5, 6]. Taking this into account, it is necessary to determine the abundance of neps, thin and thick places in the production of spun yarn and to choose the optimal composition of the mixture in order to reduce it.

Results and Discussion

LOT is prepared in 3 options at the control enterprise. In these LOTs, in the 1st variant, Porloq-4 IV-type, 1st grade; In 2nd variant, An-bayaut -2 type IV, 1st grade; In 3rd variant, Sultan IV-type, 1st grade cotton fiber was used. The effect of the number of neps on the unevenness of the spun yarn (Ne-27/1, tex-21,7) was studied. The obtained results were compared with the norm of USTER Statistics- 2018 (50%) (Table 1).

Table 1The effect of different mixture composition on the unevenness of yarns and the number of neps

The name of the indicators	Unit of measure	Uster Statistics-2018	N_e 27/1		
			1st variant	2nd variant	3rd variant
Elongation unevennes	%	7,25	5,5	6,5	7,0
Unevennes according to Uster, (U)	%	12,83	12,50	12,75	12,85
(-50%) thin places	number/ 1000 metre	2	0	1	2
(+50) thick places	number/ 1000 metre	29	25	28	30
(+200) knots	number/ 1000 metre	69	55	70	72
Hairiness, N	%	6,0	5,5	6,0	6,2

According to the results of the study, the unevenness in elongation increased from 5.5% to 7.0%, and the unevenness in USTER increased from 12.50% to 12.85%. (+50%) neps amount is 25 to 30 units (gram/fiber), (+200%) neps amount is 55 to 72 units (gram/fiber). Yarn

hairiness increased from 5.5% to 6.2%. The graphic representation of these indicators is given in Figure 1.

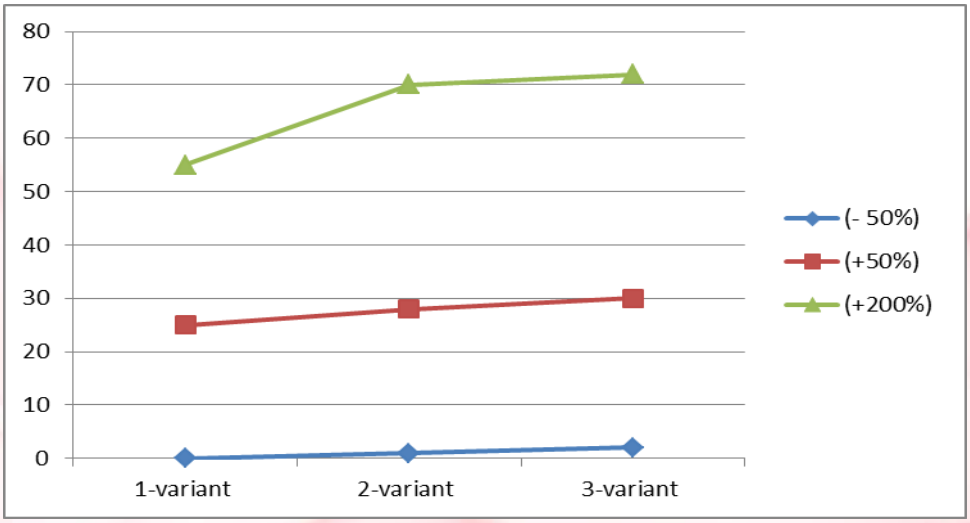

Figure 1. Variation of the number of neps according to the composition of the mixture

Conclusion

The change in the number of neps according to the composition of the mixture has a high impact on the quality indicator of the product made from it. Therefore, based on the results of the conducted research, the yarn produced from the cotton fiber mixture of option 1 has good results and was included in the quality level of 50% in accordance with USTER Statistics-2018 international requirements.

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