Nexus : Journal of Innovative Studies of Engineering Science (JISES)
Volume: 02 Issue: 04 | 2023 ISSN: 2751-7578
http://innosci.org/

Changes in the Mass and Geometric Dimensions of the Seed in the Cups Which Ripe at Different Periods

Bolqiyev Sobirjon Kholnazarovich [1], Kulmetov Mirpolat [2], Panjiev Aziz Rizakulovich [4], Ochilov Tulkin Ashurovich [5]
Tashkent Institute of Textile and Light Industry (Uzbekistan)

Yodgorova Hilola Isroilovna [3]
Jizzakh Polytechnic Institute (Uzbekistan)

Abstract: in this article, research work was carried out on a farm in Karshi district. For him, a special 10x10 meter area was selected from the cotton field; cotton was picked from the first, 3th, 6th, 9th and 12th days of cotton and separated from the seed by hand. The mass and geometric dimensions of the seed in the pods ripened in different periods were determined in the laboratory of the "Textile Materials Science" department.

Key words: depending on the type and variety of cotton, the shape is egg-shaped, turnip-shaped, round, fig-shaped, micronair, if there is a long-term storage of cotton in the garam, if the moisture content exceeds or decreases from the standard indicators, if there is no good cleaning, and secondly, the degree of resistance of different selection varieties to the effects of technological processes.

I.INTRODUCTION

The fruit of cotton is a bag, and its shape can be egg-shaped, turnip-shaped, round, fig-shaped, depending on the type and variety of cotton. The tip is blunt, spear-shaped, long or short. The weight of seed cotton in a boll is 0.1-0.25 g in wild cottons, 7-8 g in cultivated cottons with medium fibers, 3-4-5 g in fine fibers.

From the bottom to the top of the cotton bush, the branches bloom every 2-3 days, and such flowering is called short turn flowering. The buds on each harvest branch flower every 5-7 days, and this type of flowering is called long-sequence flowering.

All harvested branches in cotton are divided into several tiers of three branches. Because short blooming is 2 days and long blooming is 6 days, the ratio between them is equal to 3 (6:2=3). Because the flowering of cotton moves from branch to branch faster than the flowering of a single branch from the base to the tip, the inflorescence that forms each bush at a certain time looks like a cone.

Several varieties that have passed the State variety test and are suitable for soil and climate conditions are being planted in the provinces and districts.

The cotton variety "Namangan-77" was created by selection from the natural hybrid C-6526 at the Kyzilravot experimental farm of the Scientific-Research Institute of Cotton Selection and Seed Breeding of Uzbekistan. Bolls are 4-5, the weight of cotton in one boll is 4.5-6.4 g, the weight of 1000 seeds is 100-110 g, the yield of fiber is 37.2-38.9%.

The cotton variety "Sultan" was created from a complex cross-species hybrid of the Scientific-Research Institute of Cotton Selection and Seed Breeding of Uzbekistan. Bolls are 4-5, the weight

of cotton in one boll is 6.0-6.5 g, the weight of 1000 seeds is 130-135 g, the fiber yield is 34.0-35.0%.

The cotton variety "An-Boyovut-2" was created at the Research Institute of Experimental Biology of Plants of the RFA. The pods are 4-5-chambered, the weight of cotton in one pod is 6.0-6.5 g, the weight of 1000 seeds is 130-135 g, the fiber yield is 34.0-35.0%.

The "Andijan-35" variety was created at the Andijan branch of the Cotton Research Institute of Uzbekistan. Bolls are 4-5, the weight of cotton in one boll is 6.0-6.2 g, the weight of 1000 seeds is 119-125 g, the yield of fiber is 36.0-37.0%.

Luck variety G.S. It was created by R. Kim, a scientist of the Zaitsov Research Institute of Cotton Breeding and Seed Breeding. The growing season is 115-118 days. The height of cotton reaches 80-90 cm. The cysts are attached to the body. The pods weigh 5.0-5.5 g. Yield per hectare is up to 40 centners. Fiber output is 35-36 percent. The length of the fiber is 33-34 mm. Fiber belongs to type V. Microneur indicator 4.5-4.6. 95-100 thousand seedlings are planted per hectare. Water demand is average, wilt damage is 5-8 percent. The demand for mineral fertilizers is average.

Navbahor variety, academician D., a scientist of the Institute of Experimental Biology of Plants and Genetics of Uzbekistan. Created by Musaev and Gubanova. It takes 118-120 days from seed germination to cotton ripening. Cotton does not branch, the pods are attached to the body. 40 quintals and more can be obtained per hectare. The yield of fiber is 35-36 percent, and the length of the fiber is 33-34 mm. Fiber belongs to type V. The seed is small compared to the seed of other varieties. 100-110 thousand plants are left per hectare. The variety is resistant to drought, wilt, moderate demand for mineral fertilizers.

Gulbahor variety S-4534 in the Scientific Production Association of Uzbekistan FA "Biolog". x Generated by solitary selection from generation L-434. Height 100-120 cm. The bush is pyramidal, forming 0-1 monopodial branches. The cup is ovoid, with an oblong tip, the weight of 1000 seeds is 128 g. Productivity is up to 46.3 centners per hectare. Fiber output is 38.1 percent, 5.7 g of pulp. Wilt incidence is up to 11 percent. The growing season is 125-138 days. Fiber belongs to type V.

The Bukhoro-8 variety was created by artificially transferring the photosynthetic inheritance of monocots to the Bukhoro-6 variety, which belongs to the Gossypium khirzitum species. Author A.M.Battalov and others. the height of the variety is 90-120 cm. Harvest (sympodial) branches branch 2 or 3 types in accordance with agrotechnical conditions, emerging from 5-7 joints of the main stem. Growth branches up to 0-3. The bags are large, egg-shaped, the weight of one bag of cotton is 7.0-11 g. The harvest does not spill. The variety is intermediate. It takes 118-120 days for the first pods to open 50%. The cup is mostly 5-chano, sometimes 4-chano is found. The weight of 1000 large seeds is 120-140 g, round, hairy, green-gray. Fiber belongs to type 3 and 4, soft and long. Fiber output is 35-37%, fiber length is 33-36 mm.

The Ashgabat-25 variety was created at the Scientific Research Institute of Cotton Breeding and Seed Breeding of Turkmenistan. A hybrid. The growing period is 140-150 days. The yield of fiber is 34.6 percent, the weight of one cup is 3.0-3.3 g. Fiber length is 40-41 mm, tensile strength is 4.6-4.8 gk, relative tensile strength is 37.5 gk tex. Type I fiber. Fusarium wilt resistant variety D. Created by Boboev.

Termiz-16 was created in the Surkhandarya branch of the Cotton Research Institute of Uzbekistan (UzPITI). A hybrid. The weight of cotton in one bag is 3.2 g, fiber yield is 33.7 percent. The length of the staple is 39.1 mm, the tensile strength of the fiber is 4.6-4.7 gk. metric number 6900-7200, relative breaking strength 36.6 gk tex, growth period 119 days. Provides type III fiber. Resistant to fusarium wilt disease. Nav A.G. Gavrilov, N. Created by Kholmurodov and others.

The Termiz-24 variety was created by selection at the Surkhandarya branch of UzPITI. One bag weighs 2.8 g, fiber output is 33 percent. The fiber staple length is 39.7 mm. The tensile strength of the fiber is 4.7 gk, the relative tensile strength is 36.2 gk tex. Provides type II fiber. Metric number is 7390.

In the process of processing cotton in cotton ginning enterprises, especially during cleaning and ginning, the number of defective seeds increases. In addition, one of the main reasons for the increase of these indicators is long-term storage of cotton in the garam, moisture content exceeding or decreasing from the standard indicators, not cleaning properly, and secondly, the level of resistance of different selection varieties to the effects of technological processes is different. Therefore, optimal conditions are determined for each breeding variety in cotton ginning enterprises.

One of the main processes in cotton gins is the ginning process, the main task of which is to separate the fiber from the seed.

If the seed is higher than the established standards for the degree of contamination, it is accepted for lower grades. In addition, there are oil defects in the seed, which include bruised or injured seeds, half-kerneled seeds, and discolored or damaged kernels. This is also of great importance in determining the type of seed. Defective seeds include seeds with black kernels and seeds with dark kernels, damaged kernels with less than half of their kernels, and empty kernels.

Seeds produced in cotton ginning plants are mainly divided into seeds and technical seeds. At the same time, seed seeds are saved for the next season, and technical seeds are sent to oil production enterprises. When determining the type of seed, its dirtiness and complete hairiness are taken into account. If the seed is higher than the established standards for the degree of contamination, it is accepted for lower grades. In addition, there are oil defects in the seed, which include bruised or damaged seeds, half-kerneled seeds, and discolored or damaged kernels. This is also very important in determining the type of seed.

When the quality of seed cotton decreases, during the separation of fiber from the seed in the gin equipment, about 40% of the fibers are mechanically damaged, and the amount of defects and waste in the fiber content increases 2-3 times. Some harmful defects, such as bark fiber and nodules, are increased. As a result, the quality indicators of finished products obtained from fiber deteriorate. In addition, the degree of damage increases as a result of improper drying of seeded cotton or drying at high temperature in cotton ginning enterprises, as a result of the decrease in the moisture content of the seed. The cotton seed has an irregular and symmetrical shape.

The seed consists of chalazae, lateral and micropyle parts. For example, when we dry cotton at high temperatures, there is a greater possibility that the husks will move with the fiber, especially since the chalaza part of the seed is looser. These indicators differ in selection varieties. Therefore, some selection varieties should be dried at high humidity, some selection varieties should be dried at medium humidity.

The cotton fiber that develops in the seed coat is an enlarged cell (cell) in the seed coat.

Depending on the type of cotton, the period of development and functions of the cells, the structure and size of the cells that make up the seed coat are different.

The inner cavity of the cotton fiber is canal-shaped and filled with cell sap and a thin layer of protoplasm.

In the early stages of cotton fiber development, it is cylindrical in shape. As the fiber matures, its walls thicken and elongate, and its channel becomes very narrow and flattened.

The size of the fiber channel depends on the characteristics of the type and variety of cotton, as well as on agrotechnical conditions, because cotton care affects the accumulation of cellulose.

The number of fibers produced in each seed in the currently cultivated cotton varieties is 10-15 thousand and even more. In cultivated forms of cotton, the diameter of the fiber in its middle part is around 15-20 μm, in wild forms it is 8.3-10.4 μm (N.A.Vlasova, 1974), the length of the fiber in cultivated varieties is up to 42 mm, in some species, even 60 mm goes to Depending on the cotton varieties and environmental conditions, the fiber in the boll ripens in 50-60-80 days.

II. METHODOLOGY

After cotton defoliation in the cotton field, research was carried out on changes in the mass and geometric dimensions of the seed in the boll, and the results of the research are presented in Table 1.

Table 1 Seed in pods ripened at different times changes in mass and geometric dimensions

№	Opening of the cyst term	One seed mass,mg	The dimensions of the seed, mm		Cotton mass in the bag, g
			length	width	
1.	The first open cyst	166	9,1	4,8	4,7
2.	Open blister for 3 days	166	9,1	4,9	5,2
3.	Open blister for 6 days	172	9,1	4,8	5,3
4.	Open blister for 9 days	178	9,2	4,7	5,4
5.	Open blister for 12 days	181	10,0	5,2	5,7

Based on the results in the table, figures 1-3 show the histograms of the effect of cotton ripening periods on seed mass and geometric parameters.

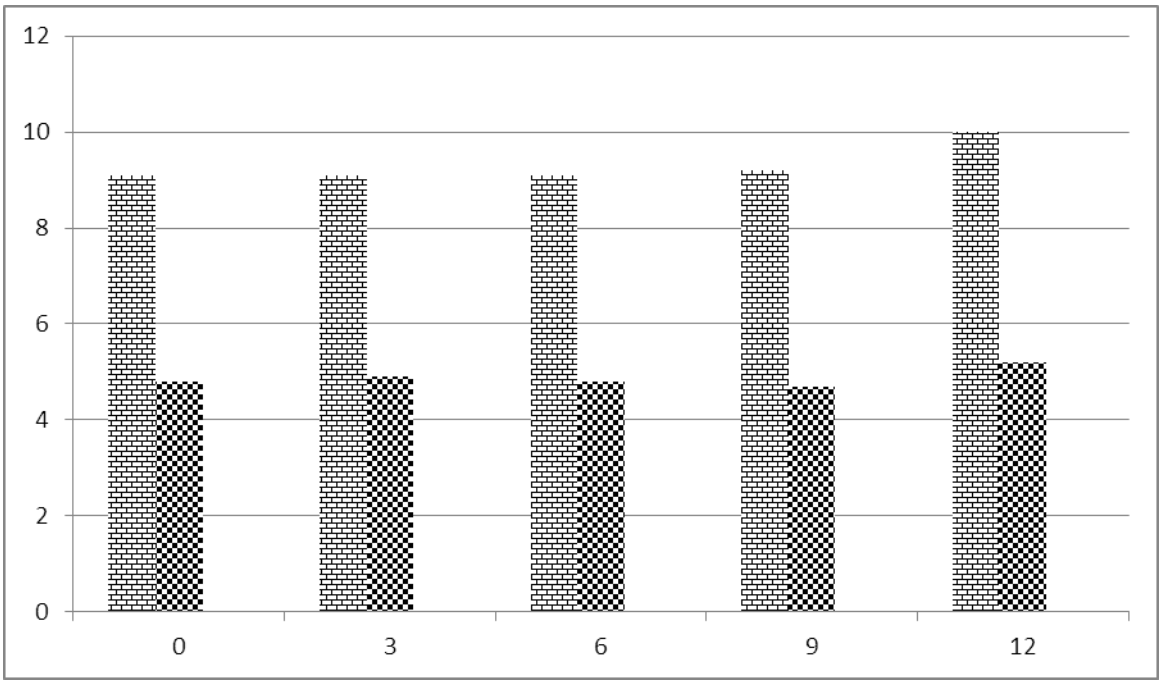

Figure 1. Seed in pods ripening at different times change in size.

- By seed length;
- By seed width.

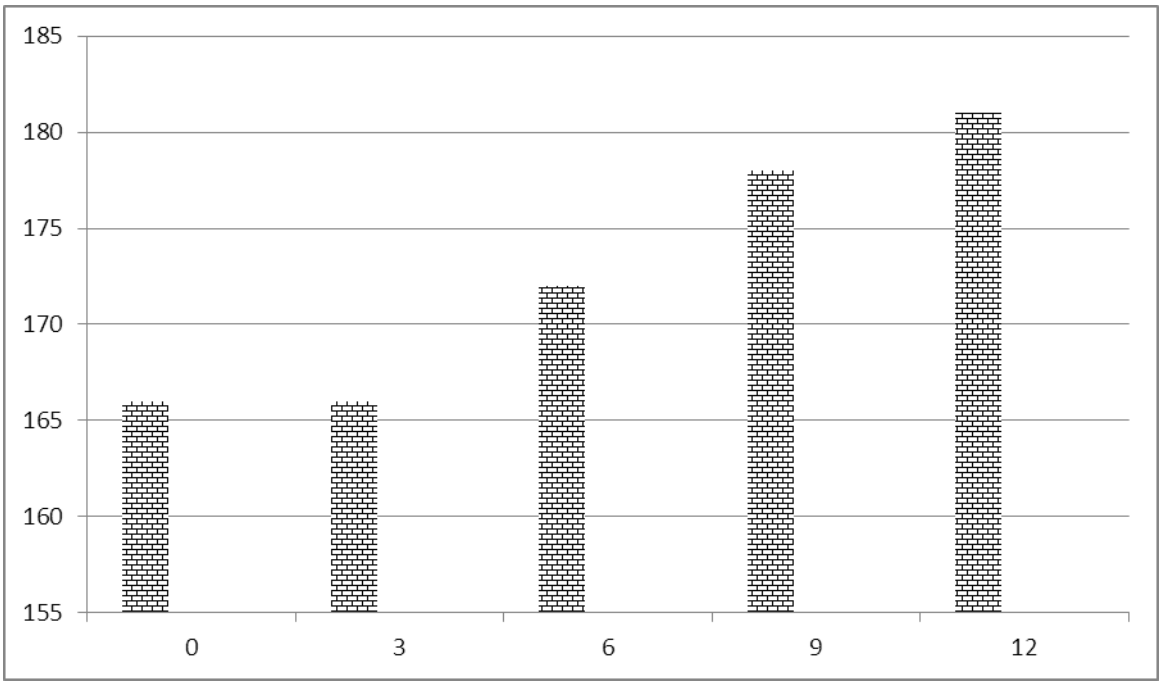

Figure 2. One in a pod ripened at different times change in seed mass.

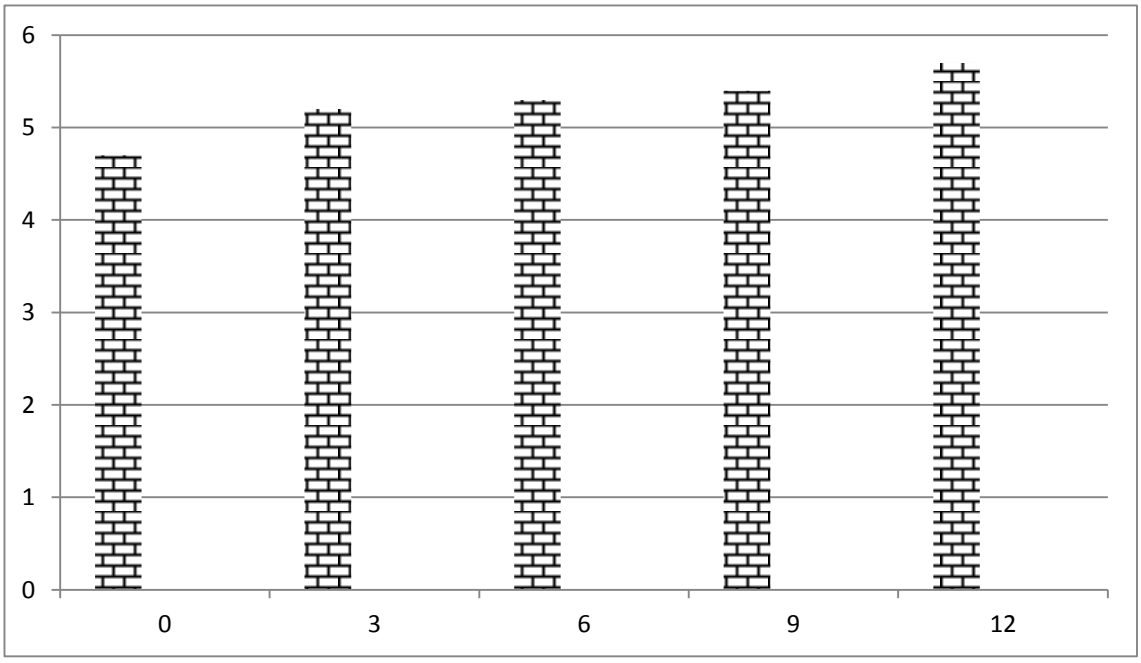

Figure 3. Cotton in bolls ripened at different times change in mass.

III. RESULTS AND DISCUSSION

Analyzing the test results, the mass of one seed in the first opened pod is 166 mg, the length is 9.1 mm, the width is 4.8 mm, the mass of cotton in the pod is 4.7 g, the mass of one seed in the pod that has been opened for 3 days is 166 mg, length 9.1 mm, width 4.9 mm, mass of cotton in a boll 5.2 g, mass of one seed in a boll opened for 6 days is 172 mg, length 9.1 mm, width 4.8 mm , the mass of cotton in the boll is 5.3 g, the mass of one seed in the boll open for 9 days is 178 mg, the length is 9.2 mm, the width is 4.7 mm, the mass of cotton in the boll is 5.4 g, the open for 12 days the mass of one seed in the boll was 181 mg, the length was 10.0 mm, the width was 5.2 mm, the mass of cotton in the boll was 5.7 g.

IV.CONCLUSION

As it can be seen from the analysis of the results of the research, the longer the cotton in the boll is kept in the field without picking, the mass, length, width, and mass of the cotton in the boll increases.

REFERENCES

1. Korabayev Sherzod Ahmadjanovich, Ochilov Tulkin Ashurovich, Ashurov Khasan To'lqin o'g'li, Kulmetov Mirpolat, Usmonova Shaxnoza Anvarovna, Mirzaakhmedova Khuriyat Basitovna. Evaluation of Physical and Mechanical Properties of Fabric Fabrics from Different Secondary Material Resources. Design Engineering. USA. 2021. P.101.
2. Muhammadjonov M, Zakirov A. Cotton agrotechnics. Tashkent. Labor-1995.
3. The team of authors. Protection of cotton from pests, diseases and weeds. Tashkent-2002.
4. Obidov Q., Sultanov M. Andijan method in cotton farming: sowing seeds under film and its efficiency. Tashkent-1996.
5. Cotton industry report, Tashkent, Labor-1989.
6. Uzokov Y., Kurbanov G'. Seed breeding and seed science. Tashkent - 2000.
7. Shaikhov E.T. , Normurodov N. and others. "Cotton factory" Tashkent, Labor-1990.
8. Recommendations for differentiated application of organic and mineral fertilizers for irrigated crops in Uzbekistan. Tashkent-1987.
9. Shahzod Husniddin o'g'li, Atanafasov Mukhiddin Rakhmonovich, Ochilov, Tulkin Ashurovich, Usmonova Shaxnoza Anvarovna, Yuldashyev Jaxongir Norquvvato'g'li, Hakimov. Influence of Cotton Fiber of Different Composition and Secondary Material Resources on Single-Cycle Elongation Deformation of Yarns. International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET).2022.
10. Z.F.Valieva, T.A.Ochilov, I.B.Nurmetova, M.T.Yuldasheva. effects of fiber composition on change of quality index of ribstitch buitted fabrics of different assortment. Advances in Science and Technology.2019.
11. Н.А.Королева, Д.Э.Казакова, К.Ж. Жуманиязов, Т.А.Очилов, Д.С. Ташпулатов, А.Ф.Плеханов. влияние различного смесового состава на механическую поврежденность и длину волокна по переходам прядильных процессов. известия высших учебных заведений. № 5 (383) "Технология текстильной промышленности". 2019.
12. Ochilov Tulkin Ashurovich, Saidmuratova Salomat Saidazizovna, Xaydarov Ulug'bek Panjievich, Xasanov Jo'rabek Toshboy o'g'li. Influence of Vacuum Evaporation Process on

the Index Quality of Yarns. International Journal of Advanced Research in Science, Engineering and Technology Vol. 7, Issue 1 , January 2020. P. 12651.

13. T.A.Ochilov, D.M.Isaeva, N.A.Niyazova, Sh.P.Shumkarova, T.G'. Bobomurodov. Changes in Technological Performance of Lastic Knitted Textiles in Different Range. International Journal of Advanced Research in Science, Engineering and Technology Vol. 7, Issue 9 , September 2020. P. 14846.
14. M.R.Atanafasov, T.A.Ochilov, R.X.Norboev, M.A.Mansurova, D.A.Khalmatov. Changes in the Uneven Indexes of Sliver and Threads by Different Technological Processes. International Journal of Recent Technology and Engineering, Volume-9 Issue-1, May 2020. P.2809.
15. T.A.Ochilov, B.B.Akhmedov, T.A.Toyirova, Sh.S.Mengnarov, J.T.Xasanov. Influence of Separating Fibrous Seed Mass to Fractions to Quality. International Journal of Recent Technology and Engineering, Volume-9 Issue-1, ay 2020.p.200.
16. Akhmedov Bakhodir, Akbarov Rustam, Ochilov Tulkin Ashurovich, Umirova Robiyakhan Bakhtiyarovna. Changes in the physical and mechanical properties of shirt fabrics with different fiber content. Proceeding of International Conference on Research Innovation In Multidisciplinary Sciences, 2021 Hosted From New York USA.p.227.