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INFLUENCE OF DIFFERENT SOWING METHODS, FERTILIZER RATES, PINCHING AND HARVESTING TERMS ON THE NUMBER OF BOLLS AND FIBER YIELD IN COTTON VARIETIES

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SUMMARY

The purpose of the research - to study the influence of different sowing methods, fertilizer rates, timing of pinching and harvesting on the number of bolls in cotton varieties, the weight of cotton from one boll, the weight of 1000 seeds and the yield of fiber of cotton varieties in Azerbaijan in order to ensure a significant increase in productivity

The methodology of the research - to study the characteristics of the growth, development and formation of the yield of cotton varieties, depending on the methods of sowing, fertilizer rates, timing of pinching and harvesting; establish the influence of sowing methods, fertilizer rates, timing of pinching and harvesting on the formation of productivity and technological properties of cotton fiber; determine the economic efficiency of cotton cultivation with optimal sowing methods, fertilizer rates, timing of pinching and harvesting; to give recommendations to the production on the optimal methods of sowing, fertilizer rates, terms of pinching and harvesting in the conditions of Azerbaijan

The practical importance of the research - The practical significance of the research lies in the fact that the introduction into production of the developed optimal options for the studied sowing methods, fertilizer rates, timing of pinching and harvesting provides the highest level of yield per hectare. Conclusions, suggestions and recommendations formulated as a result of the research can be widely used in production conditions to obtain high yields.

The results of the research - the use of sowing methods, fertilizer rates, timing of pinching and harvesting had a different effect on the number of bolls, fiber yield and weight of 1000 seeds in cotton varieties. The number of bolls was in the variety Ganja-103-14, and in the variety Ganja-110-15. The mass of raw cotton from one boll was 5.6; 6.2; 5.8; 6.0 grams for the Ganja-103 variety, and for the Ganja-110 variety - 5.7; 6.3; 5.9 and 6.2 grams. Agricultural practices applied to varieties also affected the weight of 1000 seeds. So, in the Ganja-103 variety, the weight of 1000 seeds were 124-127 grams, and in the Ganja-110 variety - 126-131 grams. The fiber yield of both varieties was high in these variants.

The scientific novelty of research - based on the results of research in the conditions the plain of Mill of Azerbaijan, we scientifically substantiated and established the optimal methods of sowing, fertilizer rates, timing of pinching and harvesting, ensuring the maximum possible yield of raw cotton. It has been established that the optimal sowing methods, fertilizer rates, timing of pinching and harvesting have a great influence on the growth, development and productivity of cotton varieties. Optimal sowing methods, fertilizer rates, pinching and harvesting periods significantly reduce the fall of fruit elements, ensure the accumulation of a larger number of full-fledged bolls, and also contribute to an increase in the economic productivity of cotton. The real possibility of obtaining high yields with optimal sowing methods, fertilizer rates, timing of pinching and harvesting, as well as their economic efficiency for the cultivation of cotton, has been proved

Keywords: Sowing methods, conventional sowing, ridge sowing, fertilizer rates, pinching, number of bolls, raw cotton yield from one boll, 1000 seeds, fiber yield.

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Introduction.

Cotton is essentially produced for its fibre, which is universally used as a textile raw material. Cotton is an important commodity in the world economy. Grown in more than 100 countries, cotton is a heavily traded agricultural commodity, with over 150 countries involved in exports or imports of cotton.

Cotton is also a very political crop because of its importance in world trade and to the economies of many developing countries. In many countries, cotton exports not only are a vital contribution to foreign exchange earnings but also account for a significant proportion of GDP and tax income. Cotton is playing a major role in economic development of many countries around the world.

The "State Program for the Development of Cotton Growing in the Republic of Azerbaijan for 2017-2022" (hereinafter referred to as the State Program) is aimed at strengthening state support for cotton growing and solving problems in this area [1].

Since cotton is a technical plant, the organization of an optimal diet throughout the entire period of development leads to the rapid maturation of the main phases of plant development and their intensive passage. In the development of this valuable plant, along with the sowing scheme and chasing, in addition to the main nutrients, many microelements play an important role. These elements increase the absorption of nitrogen, phosphorus and potassium by accelerating biochemical reactions in plants and help increase yields. Due to the fact that plants absorb very few trace elements from the soil, they are introduced into the soil in small quantities. These fertilizers can be applied at the same time as the seeds and mixed with the main fertilizers before sowing, during sowing and at the time of top dressing. To increase the energy of seed germination before sowing, they must be moistened with a 0.01-0.05% solution of microelements.

Materials and methods. Depending on the soil and climatic conditions, the provision of soil with organic matter, the variety of the manure precursor plant, it is necessary to apply 10-15 tons or more per hectare, under the main plowing. The introduction of organic fertilizers into the soil not only enriches it with nutrients, but also provides energy to the microorganisms in the soil, which increases their biological activity and soil fertility. The best results are obtained with the joint application of organic fertilizers with mineral fertilizers during the growing season of the plant. With such a fertilizer, when mineral fertilizers are mixed with completely rotted manure, bird droppings, silkworm waste, etc., the efficiency of fertilizers increases [4, p.81-86].

Based on the amount of cotton harvested during the growing season, it is possible to calculate the amount of nutrients that it absorbs from the soil. For example, at present, in the country's cotton-growing farms, the average cotton yield is 32-35 centners per hectare. Therefore, the nutrients absorbed by the plant must be returned to the soil in the form of fertilizer. Despite the fact that there is a direct relationship between nutrients absorbed from the soil and yield, when determining fertilizer rates, the amount of the predicted yield should be considered [6, p.126].

Depending on the soil and climatic conditions, one should also consider the varietal characteristics of cotton. Thus, fine-fiber cotton receives more nutrients from the soil than medium-fiber ones, and therefore the yield is 35 centners or 3.5 t/ha, since, on average, for the accumulation of 1 ton of crop, it removes 60 kg of nitrogen from the soil. Due to the natural fertility of the soil, 10 centenars of crops are obtained from each hectare. For each ton of crop, 60 kg of nitrogen must be given. Therefore, for 2.5 tons of crop obtained in addition to natural fertility, 150 kg (60x2.5) of nitrogen should be applied. This is the norm of nitrogen fertilizers required to obtain 25 centenars per hectare. In the same way, potassium and phosphorus can be determined [5, p.459-464].

The influence of sowing methods, fertilizer rates, timing of minting and harvesting on the structural indicators of cotton varieties in the conditions the plain of Mill was studied. As a result, the structural features of the varieties differed depending on the impact of the applied agricultural practices. The influence of the applied agrotechnical methods on the number of bolls in varieties, the mass of raw cotton from one bolus and the mass of 1000 seeds was different [7, 414 p.].

As can be seen from the table, the use of sowing methods, fertilizer rates, timing of minting and harvesting had a different effect on the number of bolls, fiber yield and weight of 1000 seeds in cotton varieties. The Ganja-103 variety had 14 bolls, and the Ganja-110 variety had 15 bolls.

The mass of raw cotton from one box in the Ganja-103 variety was 5.6; 6.2; 5.8; 6.0 grams, and in the Ganja-110 variety, respectively, 5.7; 6.3; 5.9 and 6.2 grams. Due to the agricultural practices applied to the varieties, the weight of 1000 seeds were also different. In the Ganja-103 variety, the weight of 1000 seeds were 124-127 grams, and in the Ganja-110 variety - 126-131 grams. The fiber yield of both varieties was high in these variants.

In the variants where the sowing was carried out according to the scheme 90x10x1 (111 thousand plants) in both varieties, with a fertilizer rate of N100P50K40, when minting on August 1 and harvesting on September 25, the results were higher.

Seeds are of strategic importance in all areas of crop production. The higher its genetic potential, the higher the yield. One of the most important indicators is the quality of seeds and the strong development of varieties. The higher the seed quality, the longer the variety's genetic characteristics can be retained.

In cotton varieties, fully formed and ripened seeds have an irregular pear-shaped ovary, the ratio of its width to length varies. It consists of an embryo and two integuments covering it - an inner integument and an outer thick, lignified shell. Seed size varies among varieties depending on the applied agricultural practices. The seed size is 10-11 mm long and 4-6 mm wide (diameter).

In all varieties of cotton, the mass of seeds depends mainly on their size, size and fullness of the embryo. The mass of the seed can be from 50 to 200 mg and a little more. In medium-fiber varieties (cultivars cultivated in Azerbaijan), it is 90-160 mg, in fine-fiber varieties - 120-150 mg.

In cultivars of cotton, the seed weight is usually referred to as the weight of 1000 seeds. The larger and fuller the embryo, the greater the seed mass. The relative weight of the germ and husk is not the same for seeds of different sizes of cotton varieties, the weight of the germ decreases due to the weight of the seed. The mass of the peel, on the contrary, increases. The weight of the seed and the relative weight of the embryo gradually decrease inside the bush from the lower branch up and along the branch. The germ of the seed, also called the kernel, depends on two cotyledons or the variety itself, or on external conditions. The better the conditions for its development, the faster and better the seed will germinate. Mature seeds can be stored for many years under favorable conditions. Within 6 years (according to A. I. Schleicher), the seeds of medium fiber varieties of cotton, stored in a dry room, gave good seedlings when sown.

Seeds of last year's crop are often taken as seed material, where the crop has good germination (more than 90%), having completely passed the period of post-harvest ripening. The seeds are heated in a special way to increase their maturity after harvest.

The quality of seeds is greatly influenced by the implementation of the applied agrotechnical methods at the optimum time. With incorrect and untimely implementation of any agrotechnical methods during the growing season, there is a weak development of plants in their general dynamics. Cotton is very demanding on water and nutrients. If any of these

are not given on time and in the required quantity, the quality of the crop, fiber and seeds will be greatly reduced.

All techniques, from sowing in the spring to harvesting a ripe crop, must be carried out correctly and on a scientific basis. The harvesting of mature seeds should also be approached carefully. With premature collection of seeds, their quality deteriorates and the germination of seeds decreases. It is expected that the quality of seeds harvested after full maturity will deteriorate and will not meet the standard.

When harvesting cotton seeds, it is necessary to accurately determine the moisture content. Seed products should be dried in specially prepared places, and then packaged and stored. The main product of cotton production is its fiber, i.e. all product separated from seeds is fiber.

When using fiber, more attention is paid to its technological properties.

The quantity and quality of fiber is one of the main indicators of the quality of varieties. The main technological properties of cotton fiber are its length, fineness, strength, elasticity and curliness.

In cultivated forms of cotton, the fiber length varies from 18-20 mm to 40-50 mm and even from 55-60 mm. The longest fiber belongs to Gossipium barbadenze (fine staple cotton) and Egyptian cotton.

It is followed by West Indian (Gossipium triguspidatum), medium staple (Gossipium hirzutium), Afro-Asian bolls (Gossipium herbaseum) and the shortest fiber Indochinese (Gossipium arbareum) cotton.

In many medium-fiber fibers, the fiber length reaches 31-33 mm, in some 35-36 mm, and in fine-fiber 38-42 mm.

The longer the fiber of the variety, the better. The fineness of the fiber is determined by the diameter (width) of the dried fiber and is calculated in micrometers (μm). Fibers of various cultural forms have a diameter of 7-10 microns to 30 microns, in most cases 15-25. The length of the fiber is called the metric number, i.e. the total length of 1 fiber is expressed in meters or the length of 1 mg of fiber is expressed in millimeters. The thinner the fiber, the higher its metric number. The metric number of the thickest coarse fibers is 2500, and the thinnest - about 12000. The metric number of the fibers of medium-staple cotton is 5300-6500, in most cases 5000-5500, and for fine-staple cotton 6500-8000.

Conclusions and discussion. The use of sowing methods, fertilizer rates, timing of pinching and harvesting had a different effect on the number of bolls, fiber yield and weight of 1000 seeds in cotton varieties. The number of bolls was in the variety Ganja-103-14, and in the variety Ganja-110-15. The mass of raw cotton from one boll was 5.6; 6.2; 5.8; 6.0 grams for the Ganja-103 variety, and for the Ganja-110 variety - 5.7; 6.3; 5.9 and 6.2 grams. Agricultural practices applied to varieties also affected the weight of 1000 seeds. So, in the Ganja-103 variety, the weight of 1000 seeds were 124-127 grams, and in the Ganja-110 variety - 126-131 grams. The fiber yield of both varieties was high in these variants.

Table. Influence of different sowing methods, fertilizer rates, pinching and harvesting terms on the number of bolls in cotton varieties, the weight of cotton from one boll, the weight of 1000 seeds and fiber yield

Variants					Number of bolls perplant, pieces	Weight of cotton from one boll, grams	Fiber yield, %	Weight of 1000 seeds, grams
Varieties	Sowing methods	Fertilizer rates	Pinching terms	Harvesting terms				
Ganja-103	90x10x1(111 thousand pieces of plants)	$N_{100}P_{50}K_{40}$	01 August	25 September	7	5.6	36,0	114-119
	90x15x1(74 thousand pieces of plants)	$N_{100}P_{50}K_{40}$	01 August	25 September	12	6.2	36,7	124-127
	90x10x1(111 thousand pieces of plants)	$N_{120}P_{75}K_{50}$	12 August	15 October	8	5.8	36,6	115-120
	90x15x1(74 thousand pieces of plants)	$N_{120}P_{75}K_{50}$	12 August	15 October	13	6.0	37,1	121-124
Ganja-110	90x10x1(111 thousand pieces of plants)	$N_{100}P_{50}K_{40}$	01 August	25 September	7	5.7	36,2	113-117
	90x15x1(74 thousand pieces of plants)	$N_{100}P_{50}K_{40}$	01 August	25 September	14	6.3	36,6	126-131
	90x10x1(111 thousand pieces of plants)	$N_{120}P_{75}K_{50}$	12 August	15 October	6	5.9	37.0	116-120
	90x15x1(74 thousand pieces of plants)	$N_{120}P_{75}K_{50}$	12 August	15 October	15	6.2	37.9	121-124

Result.

As a result of our research, it can be noted that the use of sowing methods, fertilizer rates, timing of pinching and harvesting differently affected the number of bolls, fiber yield and weight of 1000 seeds in cotton varieties. The number of bolls was in the variety Ganja-103-14, and in the variety Ganja-110-15. The mass of raw cotton from one boll was 5.6; 6.2; 5.8; 6.0 grams for the Ganja-103 variety, and for the Ganja-110 variety - 5.7; 6.3; 5.9 and 6.2 grams. Agricultural practices applied to varieties also affected the weight of 1000 seeds. So, in the Ganja-103 variety, the weight of 1000 seeds were 124-127 grams, and in the Ganja-110 variety - 126-131 grams. The fiber yield of both varieties was high in these variants.

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MÜXTƏLİF SƏPİN ÜSULLARININ, GÜBRƏ NORMALARININ, UCVURMANIN VƏ YIĞIM MÜDDƏTLƏRİNİN PAMBIQ SORTLARINDA QOZALARIN SAYINA VƏ LİF ÇIXIMINA TƏSİRİ

XÜLASƏ

Tədqiqatın məqsədi -Azərbaycan şəraitində məhsuldarlığı xeyli artırmaq məqsədi ilə müxtəlif səpin üsullarının, gübrə normalarının, ucvurmanın və yığım müddətlərinin pambıq sortlarında qozaların sayına, bir qozadan çıxan pambığın, 1000 ədəd toxumun çəkisinə və lif çıxımına təsirinin öyrənilməsidir.
Tədqiqatın metedologiyası - səpin üsullarının, gübrə normalarının, ucvurma və yığım müddətlərinin pambıq sotrlarının boyuna, inkişafına və məhsuldarlığına təsirinin xüsusiyyətlərini öyrənmək; səpin üsullarının, gübrə normalarının, ucvurma və yığım müddətlərinin pambıq sortlarının məhsuldarlığına və lifin texnoloji göstəricilərinə təsirini müəyyən etmək; səpin üsullarının, gübrə normalarının, ucvurma və yığım müddətlərinin pambığın becərilməsinə təsirinin iqtisadi səmərəliyini təyin etmək və müxtəlif pambıq sortları becərildikdə tövsiyyələr vermək.
Tədqiqatın tədbiqi əhəmiyyəti - tədqiqatın tətbiqi əhəmiyyəti ondan ibarətdir ki, bir hektardan yüksək məhsulun əldə edilməsini təmin edən optimal səpin üsulları, gübrə normaları, ucvurma və yığım müddətləri istehsalata təbiq edilsin. Tədqiqat nətcəsində əldə olunmuş nəticələr, təkliflər və tövsiyələr yüksək məhsul alınması üçün istehsalatda geniş istifadə oluna bilər.
Tədqiqatın nəticələri - Səpin üsullarını, gübrə normalarının, ucvurmanın və yığım müddətlərinin tətbiqi pambıq sortlarında qozaların sayına, lif çıxımına və 1000 ədəd toxumun çəkisinə müxtəlif formada təsir göstərmişdir. Qozaların sayı Gəncə-103 sortunda 14 ədəd və Gəncə-110 sortunda 15 ədəd olmuşdur. Bir Qozadan çıxan xam pambığın çəkisi Gəncə-103 sortunda 5,6; 6,2; 5,8; 6,0 qram və Gəncə -110 sortunda 5,7; 6,3; 5,9 və 6.2 qram müşahidə olunmuşdur. Sortlarda tətbiq olunan aqrotexniki tədbirlərin təsirindən 1000 ədəd toxumun çəkisi də müxtəlif olmuşdur. Gəncə-103 sortunda 124-127 qram və Gəncə-110 sortunda isə 126-131 qram olmuşdur. Hər iki sortda lif çıxımıda qeyd olunan variantlarda yüksək olmuşdur.
Tədqiqatın elmi yeniliyi - Azərbaycan respublikası Mil düzü şəraitində yüksək xam pambıq məhsulunun alınması üçün optimal səpin üsullarına, gübrə normalarına, ucvurma və yığım müddətlərinə dair elmi yeniliklər müəyyənləşdirilmişdir. Optimal səpin üsulları, gübrə normaları, ucvurma və yığım müddətləri pambıq sortlarının boyuna, inkişafına və məhsuldarlığına böyük təsir göstərir. Bu amillər bar orqanlarının mühüm dərəcədə tökülməsini azaldır, yararlı qozaların sayının, bitkinin təsərrüfat məhsuldarlığının artırılmasına imkan verir.
Açar sözlər: Səpin üsulları, adi səpin, tirəyə səpin, gübrə normaları, ücvurma, qozaların sayı, bir qozadan çıxan xam pambıq, 1000 ədəd toxum, lif çıxımı.

ВЛИЯНИЕ РАЗЛИЧНЫХ СПОСОБОВ ПОСЕВА, НОРМ УДОБРЕНИЙ, СРОКОВ ЧЕКАНКИ И УБОРКИ НА КОЛИЧЕСТВО КОРОБОЧЕК И ВЫХОД ВОЛОКНА У СОРТОВ ХЛОПЧАТНИКА

РЕЗЮМЕ

Цель исследования - изучить влияние различных способов посева, норм удобрений, сроков чеканки и уборки на количество коробочек у сортов хлопчатника, массу хлопчатника из одной коробочки, массу 1000 семян и выход волокна сортов хлопчатника в условиях Азербайджана с целью обеспечения существенного повышения урожайности.

Методология исследования - изучить особенности роста, развития и формирования урожая хлопчатника сортов в зависимости от способов посева, норм удобрений, сроков чеканки и уборки; установить влияние способов посева, норм удобрений, сроков чеканки и уборки на формирование урожайности и технологические свойства хлопкового волокна; определить экономическую эффективность возделывания хлопчатника при оптимальных способах посева, норм удобрений, сроков чеканки и уборки; дать рекомендации производству по оптимальным способам посева, норм удобрений, сроков чеканки и уборки в условиях Азербайджана.

Важность исследовательского приложения – практическая значимость исследований заключается в том, что внедрение в производство разработанных оптимальных вариантов изученных способов посева, норм удобрений, сроков чеканки и уборки обеспечивает получение наивысшего уровня урожайности с одного гектара. Выводы, предложения и рекомендации, сформулированные в результате исследования, могут быть широко использованы в производственных условиях для получения высоких урожаев.

Результаты исследования - применение способов посева, нормы удобрений, сроков чеканки и уборки по-разному влияли на количество коробочек, выход волокна и массу 1000 семян у сортов хлопчатника. Количество коробочек было у сорта Гянджа-103-14, а у сорта Гянджа-110-15. Масса хлопка-сырца из одной коробочки составило у сорта Гянджа-103- 5,6; 6,2; 5,8; 6,0 грамм, а у сорта Гянджа-110 - 5,7; 6,3; 5,9 и 6,2 грамма. Применяемые к сортам агротехнические приемы также повлияли и на массу 1000 семян. Итак, у сорта Гянджа-103 масса 1000 семян составила 124-127 грамм, а у сорта Гянджа-110 - 126-131 грамм. Выход волокна у обоих сортов был высоким в указанных вариантах.

Научная новизна исследования - на основании результатов исследований в условиях Мильской степи Азербайджана нами были научно-обоснованы и установлены оптимальные способы посева, нормы удобрений, сроки чеканки и уборки, обеспечивающих получение максимально возможного урожая хлопка-сырца хлопчатника. Установлено, что оптимальные способы посева, нормы удобрений, сроки чеканки и уборки оказывают большое влияние на рост, развитие и продуктивность сортов хлопчатника. Оптимальные способы посева, нормы удобрений, сроки чеканки и уборки значительно снижают опадение плодоэлементов, обеспечивают накопление большего количества полноценных коробочек, а также способствуют увеличению хозяйственной продуктивности хлопчатника. Доказана реальная возможность получения высоких урожаев при оптимальных способах посева, норм удобрений, сроков чеканки и уборки и их экономическая эффективность для возделывания хлопчатника.

Ключевые слова: Методы посева, обычный посев, гребневой посев, нормы удобрений, чеканка, количество коробочек, выход хлопка-сырца с одной коробочки, 1000 штук семян, выход волокна.