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Effect of Electromagnetic Field on Crop Branches During Flowering Periods of Cotton Under Norinal and Water Deficit Conditions

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Annotation. The article presents an analysis of the researches obtained as a result of the study of the influence of electromagnetic waves on the growth and development of cultivars and the variability of some economic characteristics in the conditions of water shortage. Based on the obtained results, it was determined that cultivar plants have different responses to unfavorable conditions and low-frequency electromagnetic waves before planting, indicating that they belong to heterogeneous and homogeneous populations or depend on their genotypic status.

Key words: genotype, genetic collection, cotton, variety, line, electromagnetic induction, stress, vegetation, variation.

Introduction

The issue of fiber supply based on white gold-cotton, which is the pride of our independent republic, is of strategic importance [1]. Unfavorable conditions have a negative effect on the growth and productivity of the cotton plant. It is important to study the physiological, biochemical and genetic processes that occur in plants under such conditions, and based on their study, it will be possible to create disease-resistant and productive varieties of plants that are adapted to adverse conditions. Accordingly, in order to increase the yield of cotton and not lose its quality, scientifically based approaches are required, according to which, it is urgent to find genotypes adapted to stress conditions or to solve problems related to increasing resistance characteristics by using additional methods.

Scientific sources contain information from foreign and domestic authors regarding changes in physical factors or environmental factors and many morphological and physiological parameters related to them. However, in most of the studies, the mechanisms of the factor's influence on the biological object, genotype and environmental relations are not fully disclosed [1, 2]. Accordingly, it is important to determine the effect of EMI on the variability of plant traits and adaptation to environmental conditions under gray soil conditions, with the effect of EMI on the seeds of some cultivars and two promising lines of genetic collection [3, 4].

In the course of our research, the development of the number of branches and bolls from the important signs of plants was studied according to the vegetation period. In this case, the average values of the varieties developed under normal and water deficit conditions were determined according to the number of crop branches, and the differences between control and experimental variant plants were analyzed. The obtained results are reflected in Table 1 according to the flowering period of plants, and Table 2 according to the maturation period. During the flowering period of the cultivars, the development of the crop branches under standard irrigation conditions, the superiority of the plants of the experimental option compared to the plants of the control option is as follows: Andijan-37 (F-2.3 d.), Bukhara-102 (F-1.7 d.), Farovon (F -1.3 d.), Namangan-77, Ibrat, S-6524 (from F-1.1 d.), Khorezm-127, Khorezm-150 (from F-0.7 d.) and Sultan variety (F from -0.4 d.), and in the conditions of water shortage, the superiority of the experiment over the control was initially S-6524 (F-1.2 d.), Farovon and Bukhara-102 (from F-0.9 d.), Bukhara -8, Khorezm-150, Andijan-37 (from F-0.6 d.), Sultan (from F-0.5 d.) and Ibrat (F-0.3 d.) varieties were observed.

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Table 1

Average indicators of cultivars grown under normal and water deficit conditions according to the number of crop branches during the flowering period

Varieties	The number of crop branches X ± m (piece)					
	Normal condition			Water shortage		
	C	E	difference	C	E	difference
Namangan – 77	12,2±0,27	13,3±0,29	1,1	8,6±0,35	8,3±0,28	-0,3
Farovon	12,3±0,41	13,6±0,36	1,3	8,0±0,33	8,9±0,46	0,9
Bukhara – 8	11,1±0,43	11,7±0,38	0,6	9,7±0,28	10,3±0,31	0,6
Bukhara-102	10,0±0,37	11,7±0,32	1,7	7,6±0,45	8,5±0,36	0,9
Khorezm-127	11,2±0,21	11,9±0,37	0,7	9,1±0,27	9,5±0,44	0,4
Khorezm-150	10,7±0,31	11,4±0,21	0,7	8,3±0,29	8,9±0,32	0,6
Ibrat	12,0±0,31	13,1±0,29	1,1	8,6±0,36	8,9±0,24	0,3
S-6524	12,2±0,29	13,3±0,34	1,1	9,3±0,31	10,5±0,43	1,2
Andijan-37	11,4±0,39	13,7±1,97	2,3	9,2±0,26	9,8±0,47	0,6
Sultan	12,5±0,33	12,9±0,31	0,4	8,2±0,35	8,7±0,39	0,5

Note: C-control, E-experiment

So, based on the obtained results, it can be noted that among cotton varieties, the average values of the yield branches were higher in Andijan-37, Bukhara-102, Farovon, Ibrat, S-6524, and Namangan-77 plants under normal conditions, while under water shortage conditions, Bukhara -8, Khorezm-127, S-6524 and Andijan-37 varieties were observed to be higher. The superiority in the formation of crop elements occurred mainly in Bukhara-8, Bukhara-102 and Khorezm-127 cotton varieties under normal irrigation conditions, and in S-6524, Bukhara-8 and Sultan varieties under water deficit conditions.

Table 2 shows the results obtained during the ripening period according to the number of cotton branches developed under normal and water deficit conditions.

Table 2

Average indicators according to the number of crop branches at maturity of cultivars developed under normal and water deficit conditions

Varieties	The number of crop branches X ± m (piece)					
	Normal condition			Water shortage		
	C	E	difference	C	S	difference
Namangan – 77	13,4±0,31	14,0±0,33	0,6	10,6±0,29	11,5±0,32	0,9
Farovon	13,3±0,34	14,6±0,26	1,3	9,1±0,37	9,9±0,34	0,8
Bukhara – 8	11,7±0,33	12,5±0,28	0,8	10,4±0,34	10,9±0,38	0,5
Bukhara-102	11,2±0,35	13,1±0,37	1,9	10,2±0,35	11,3±0,36	1,1
Khorezm-127	12,6±0,27	12,9±0,32	0,3	10,3±0,31	11,2±0,28	0,9
Khorezm-150	12,1±0,34	13,5±0,31	1,4	10,7±0,33	11,4±0,35	0,7
Ibrat	13,3±0,29	12,9±0,34	-0,4	10,5±0,32	10,3±0,28	-0,2
S-6524	12,8±0,26	13,7±0,28	0,9	9,3±0,31	10,5±0,43	1,2
Andijan-37	11,4±0,39	13,7±0,41	2,3	10,3±0,36	9,9±0,37	-0,4
Sultan	13,6±0,35	13,1±0,38	-0,5	8,2±0,35	8,7±0,39	0,5

Note: C-control, E-experiment

Under normal irrigation conditions, the parameters of the experimental variant plants according to the yield branches were as follows compared to the control variant plants: initially Andijan-37 (C-11.4±0.39 d.; E-13.7±0.33 d.), Bukhara-102 (C-11.2±0.35 d.; E-13.1±0.37 d.), Khorezm-150 (C-12.1±0.34 d.; E-13.5±0, 31 d.), Farovon (C-13.3±0.34 d.; E-14.6±0.26 d.), S-6524 (C-12.8±0.26 d; E-13 ,7±0.28 d), Bukhara-8 (C-11.7±0.33 d.; E-12.5±0.28 d.), Namangan-77 (C-13.4±0, 31 d; E-14.0±0.33 d). In the conditions of water shortage, according to the number of crop branches, the order of placement according to

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indicators was as follows: S-6524 (C-9.3±0.31 d.; E-10.5±0.43 d), Bukhara-102 (C-10 ,2±0.33 d.; E-11.3±0.36 d.), Namangan-77 (C-10.6±0.29 d.; E-11.5±0.32 d.), Khorezm-127 (C-10.3±0.31 d.; E-11.2±0.28 d.), Farovon (C-9.1±0.37 d.; E-9.9±0, 34 d.), Khorezm-150 (C-10.7±0.33 d.; E-11.4±0.35 d.), Bukhara-8 (C-10.4±0.34 d.; E-10.9±0.38 d.) and Sultan (C-8.2±0.33 d.; E-8.7±0.39 d.) varieties were observed.

So, based on the obtained results, it can be noted that among the cotton varieties, the average values of the yield branches were observed to be higher in Bukhara-102, Khorezm-150, Farovon, and Namangan-77 varieties.

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