FERTILIZATION INFLUENCE ON SOME CHARACTERS AT COTTON SPECIES (GOSSYPIUM HIRSUTUM SP.) MARISMAS, CANADA, AND COKO IN WEATHER CONDITIONS FROM TIMISOARA IN THE YEAR 2008

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Abstract: In this paper is studied the phenotipical variability of three cotton species (Gossypium hirsutum sp.): Marismas, Canada, and Coko in the investigation year 2008. It was analized the following characters: blank cotton weight/ plant/ parcel/ agrofund, fibres weight/ plant/ parcel/ agrofund, seeds weight /plant/ parcel/ agrofund. The test was made at Didactic Station Timisoara, the experimental field being placed into a plane microrelief with large area hollow, on a sol of cambic chernozem type. The bifactorial experience was placed in the field after subdivided parcels methods. The established experimental factors were: ***factor A*** *– agrofund (a_1- $N_0P_0K_0$, a_2 – $N_{30}P_{30}K_{30}$, a_3- $N_{60}P_{30}K_{30}$, a_4- $N_{90}P_{60}K_{60}$, a_5- $N_{120}P_{60}K_{60}$, a_6- $N_{30}P_{30}K_{30}$ + foliar fertilization);* ***factor B*** *– the species (b_1- Marismas- Greece, b_2- American provenance, b_3- Coko- Greece). The vegetation conditions analysis for the cotton is made during the period May- October; active vegetation period situated between 1st May and the first autumn hoarfrost. In the cotton crop it must to have in mind the field uniformity and also the insurance of the best density to each species. The three cotton species presented a good adaptability to weather conditions from Timisoara. The cotton has the capacity to acclimate itself at lower humidity, from plant with hydrophilic aspect, and it receives fairly quickly xerofit plant features. The best results were obtained at all tree analyzed varieties in the a_4- $N_{90}P_{60}K_{60}$ agrofonds. So, the fibres weight/ plant/ parcel was at 110,58g – Marismas variety, 113,08 g – Canada variety, 101,79 g – Coko variety. The seeds weight /plant/ parcel was at 154,22 g – Marismas variety, 126,07g – Canada variety, 119,72 g – Coko variety. The blank cotton weight/ plant/ parcel was at 264,80 g – Marismas variety, 239,15 g – Canada variety, 221,51 g – Coko variety.*

Keywords: *cotton species, characters, agrofunds, fertilisation*

INTRODUCTION

It is the most important textile plant. It assures over 70-75% from the global production of filable? vegetable strings and it contributes in average 50% at the global total production of artificial and natural strings. It has an economical importance equally both exporter countries, and importer ones. The cotton is used in many domains, the main district remaining the textile industry: the alimentary industry being a important source of vegetable protein, due to the high content of protein, 21.2-29.4%; the cotton oil, but quantitative it takes the forth place in the global production of oil; nectarious plant; the fodder domain; the paper and cellulose industry; the dyestuffs and polishes industry; the plastic packages industry; the geotextile industry; the pharmaceutic industry. At over 120 years, the cotton is found as culture plant on Romania territory. In 1925 it appears the first official data concerning the cotton, when it is registered a surface of 125 hectares sowed with this plant.

MATERIAL AND METHODS

The experimental field was placed into a plane relief with large cavity area. The sol where the experiments were done was cambic chernozem, damp phreatic, decarbonate, formed on loesoide stores, dusty-clay on lute-clay. The phreatic water is found at 1.5-2.0 m depth.

Bifactorial experience was placed in the field under subdivided parcel method. The experimental factors established were:

Factor A : agrofield:
Factor A : agrofield:
a_1 - N_0 P_0K_0
a_2 - $N_{30}P_{30}K_{30}$
a_3 - $N_{60}P_{30}K_{30}$
a_4 - $N9_0P_{60}K_{60}$
a_5 - $N_{120}P_{60}K_{60}$
a_6 - $N_{30}P_{30}K_{30}$ + foliar fertilization
Factor B: species:
b1- Marismas- Greece descent
b2- Canada- American descent
b3- Coko- Greece descent

The applied technology for the cotton culture was the specific one in the great culture.

The ancestor plant for the cotton culture was the maize. In function of herald plant, the tillage was made at 25-30 cm depth. Germinating layer was prepared in spring through successive works (2-3) of soil loosening and grass elimination when it worked with the combiner at 4-5 cm depth. The combiner had the advantage that it could be control to work only at 5-6 cm depth, that will assure a uniform seeding as depth. It were applied treatments to control the pests and the grasses at the germinating layer preparation. An important role for the production quality and quantity have the three fertilizered macroelements: the azoth, phosphorus and potassium. To touch the established objects through investigation the crop fertilization was different made on the 6 agrofields (a_1–N_0 P_0K_0, a_2 – $N_{30}P_{30}K_{30}$, a_3 – $N_{60}P_{30}K_{30}$, a_4 – $N9_0P_{60}K_{60}$, a_5 – $N_{120}P_{60}K_{60}$, a_6 – $N_{30}P_{30}K_{30}$ + foliar fertilization). The crop fertilization was made by using complex chemical fertilizer of type N15P15K15. For seeding was used cotton seed from the crop before the first hoarfrost. The cotton was sown on 9th May, when the soil temperature was three days consequently 12 degree C; the average temperature of the air at minimum 13-15 degree C, while the soil temperature at 30 cm depth was at 10 degree C. The seeding realized at 50-60 cm between rows. After emergence were made density correction on row. The evolution monitorization and entertaining in vegetation of the entire experience and experimental factors were realized. The cropping began when on every plant were 1-2 capsules very well opened and maturity. The crop moment was chosen the one before the first hoarfrost coming down. The cropping was made between 25 September and 31 October.

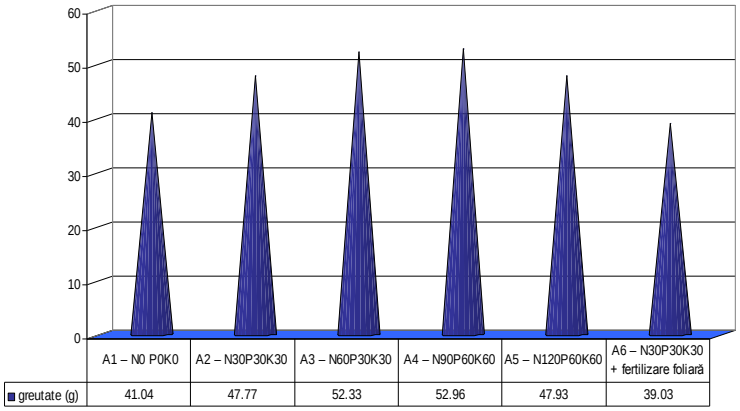
RESULTS AND DISCUSSIONS

In figure 1. is presented the average weight of the gross cotton at Marismas cotton species determined by agrofield. From the results analysis it was observed that the chemical fertilizer dose increasing with azoth positively influenced the gross cotton weight. On $N_{30}P_{30}K_{30}$ agrofield, the average weight of the gross cotton was 39.03 g., and on $N9_0P_{60}K_{60}$ agrofield -52.96 g. (figure 1).

It is impressive the fact that on $N_{60}P_{30}K_{30}$ agrofield, the average weight at Marismas species was near as value: 52.33 g., at $N_{90}P_{60}K_{60}$ -52.96 g.

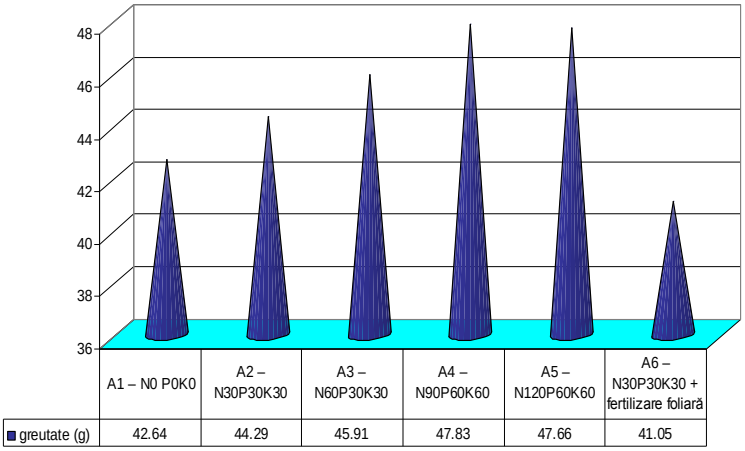
On agrofield $N_{30}P_{30}K_{30}$ + foliar fertilization, the average value of the gross cotton weight was 39.03 g, near the one realized on $N_0P_0K_0$ voucher agrofield.

In the weather conditions of the year 2008 the average weight of the cotton increased in the meantime with the azoth doses.



	41.04	47.77	52.33	52.96	47.93	39.03
S^2	52.75	27.26	81.5	22.72	96.07	92.73
S	7.26	5.22	9.03	4.77	9.8	9.63
Sx	0.73	0.52	0.90	0.48	0.98	0.96
S%	16.87	11.02	17.26	9.01	20.81	20.81

Figure 1. The average variation of weight of gross/plant cotton agrofield at Marismas species under the fertilization influence in the year 2008 in Timisoara weather conditions



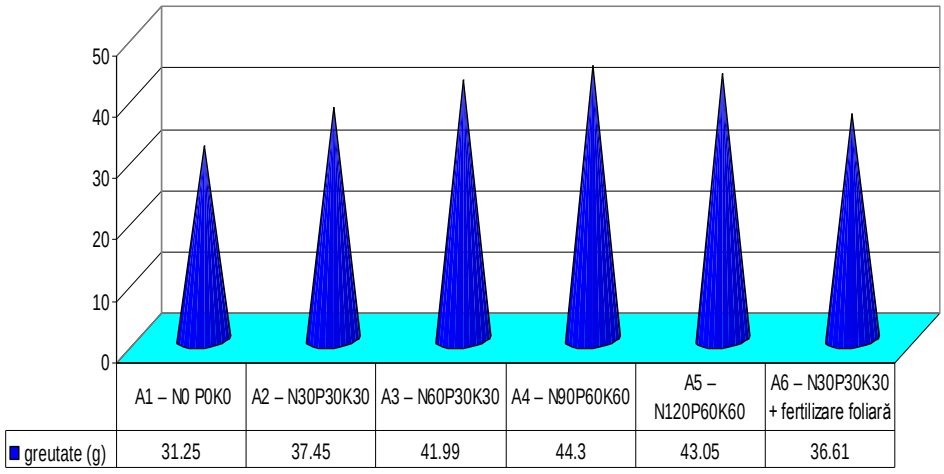
X	42.64	44.29	45.91	47.83	47.66	41.05
S^2	96.45	94.33	94.92	94.31	96.46	81.72
S	9.82	9.71	9.74	9.71	9.82	9.04
Sx	o.98	0.97	0.97	0.97	0.98	0.90
S%	23.03	21.67	24.24	26.18	26.87	22.02

Figure 2. The weight average variation of agrofield/plant/gross cotton at Canada species under fertilization influence in the year 2008 in Timisoara weather conditions

The average weight of gross cotton weight was bent of cotton productivity elements. The biggest value of average weight of gross cotton to Canada species was 47.83 g. and was

realized in $N_{90}P_{60}K_{60}$ variant. In $N_{120}P_{60}K_{60}$ variants case the average weight value of the gross cotton to Canada species was about 47.66 g. and could increase at 47.83 on $N_{90}P_{60}K_{60}$ agrofield. In $N_{30}P_{30}K_{30}$+foliar fertilization variant, the average weight value of the gross cotton on plant was 41.05.

Also, in Canada species case the azoth application in ascending doses didn't give also the weight increasing of gross cotton.



X	31.25	37.45	41.99	44.3	43.05	36.61
S^2	17.43	42.68	96.35	97.02	86.04	8.27
S	4.18	6.53	9.82	9.85	9.28	2.88
Sx	0.42	0.65	0.98	0.99	0.93	0.29
S%	13.38	17.44	22.02	25.80	22.71	7.87

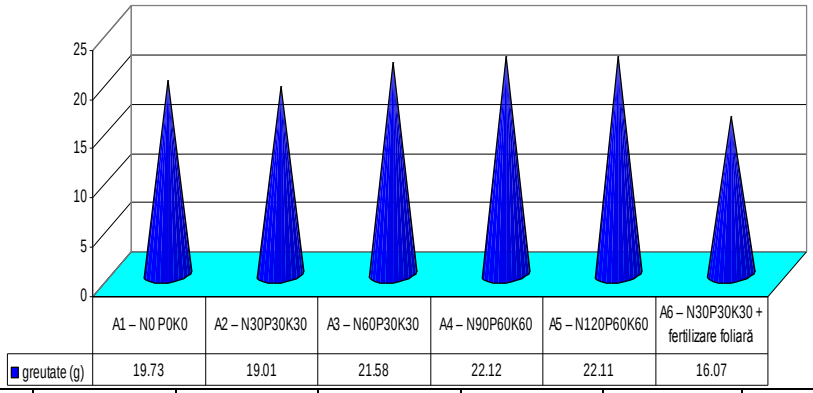
Figure 3. The weight average variation of agrofield/plant/gross cotton at Coko species under fertilization influence in the year 2008 in Timisoara weather conditions

The average weight of cotton on the plant could be observed in figure 3. from the results analysis, resulted that in the cotton seeding case under fertilization influence in the year 2008 in Timisoara weather conditions the biggest average value of gross cotton weight realized on agrofield with ($N_{90}P_{60}K_{60}$), 44.3 g.

At same the time it could observe that the azoth dose increasing, the gross cotton weight increasing were reduced. The weight value of gross cotton was 44.3 g. on $N_{90}P_{60}K_{60}$ agrofield and 43.05 g. in the case $N_{120}P_{60}K_{60}$.

The smallest average weight of the gross cotton to Coko species was realized on $N_0P_0K_0$ agrofield voucher.

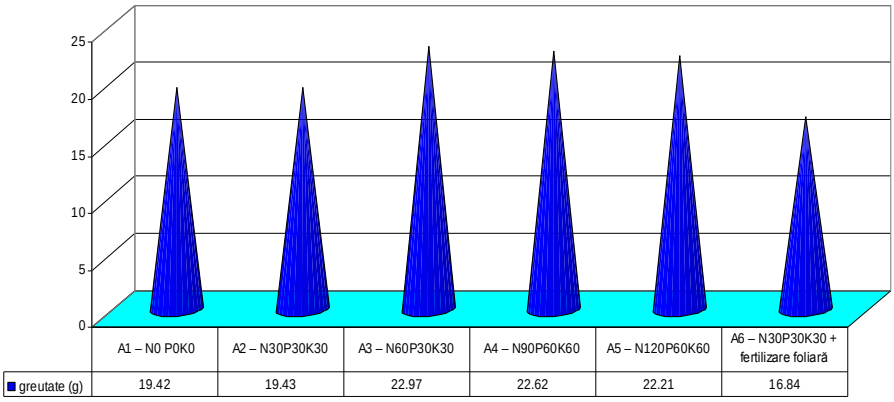
The average weight of cotton fibres to Marismas species was an important element of cotton productivity. The biggest value of the cotton fibres weight on plant was 22.12 g and was realized in $N_{90}P_{60}K_{60}$ variant. In voucher variant case $N_0P_0K_0$ the average value of cotton fibres weight was about 19.73 g and in case of $N_{60}P_{30}K_{30}$ will increase to 21.58 g. In $N_{30}P_{30}K_{30}$+foliar fertilization, the value was 16.07 g and was the smallest value of average weight at cotton fibres of Marismas species.



X	19.73	19.01	21.58	22.12	22.11	16.07
S^2	16.52	4.38	12.06	4.78	24.99	11.72
S	4.07	2.09	3.47	2.19	5	3.42
Sx	0.63	0.21	0.35	0.22	0.50	0.34
S%	31.98	10.99	16.08	9.90	22.60	21.28

Figure 4. The average weight variation agrofield/plant/cotton fibres to Marismas species under fertilization influence in the year 2008 in Timisoara weather conditions

In figure 5. were presented the average values of cotton fibres average weight in the case of different azoth application in Canada species seeding under fertilization influence in the year 2008 in Timisoara weather conditions.

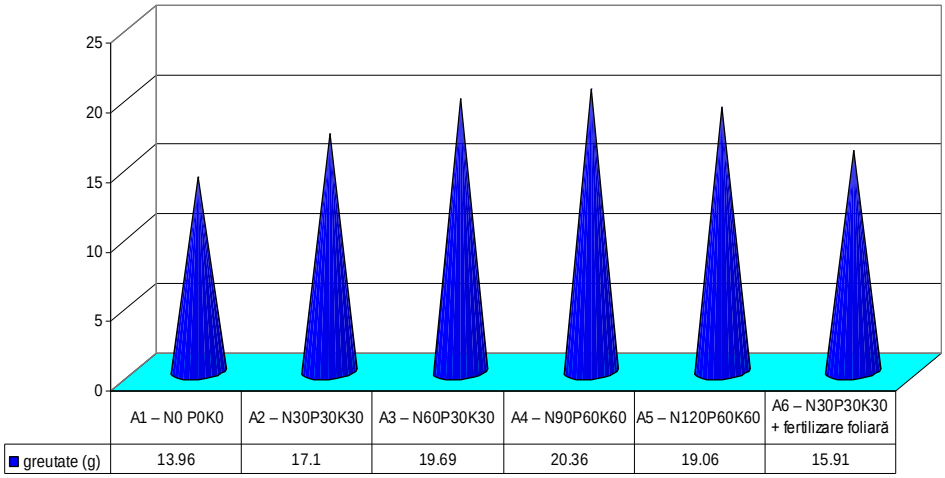


X	19.42	19.43	22.97	22.62	22.21	16.84
S^2	45.47	17.06	25.44	23.17	34.22	5.09
S	6.47	4.13	5.04	4.81	5.85	2.26
Sx	0.67	0.37	0.45	0.49	0.43	0.23
S%	35.14	20.13	24.81	29.14	25.49	13.42

Figure 5. The average weight variation agrofield/plant/cotton fibres to Canada species under fertilization influence in the year 2008 in Timisoara weather conditions

Through results analysis it could observe that, in the voucher variant $N_0P_0K_0$ the average weight of cotton fibres was 19.42 g. The biggest average weight value of the cotton fibres on the plant to Canada species was realized in $N_{60}P_{30}K_{30}$ variant, 22.97 g. It could remark the weight values differences of existent fibres between the fertilizered variants with azoth. The average weight of cotton fibres decreased in the meantime with the increasing of azoth dose from 60 to 120 kg/ha (22.97 at azoth dose of 60 kg/ha and 22.21 g in the case of azoth dose 120 kg/ha.

In figure 6. were presented the average values of cotton fibres weight on the plant under the fertilization influence with azoth in case of Coko species seeding.



X	13.96	17.10	19.69	20.36	19.06	15.91
S^2	4.03	8.01	28.57	13.78	6.5	24.97
S	2.01	2.83	5.35	3.71	51	5
Sx	0.20	0.28	0.50	0.49	0.25	0.50
S%	14.40	16.55	28.07	29.72	16.89	31.43

Figure 6. The average weight variation agrofield/plant/cotton fibres to Coko species under fertilization influence in the year 2008 in Timisoara weather conditions

At Coko species the average weight of cotton fibres had a small variation, than to average weight of cotton fibres from Canada species, varied between 13.96 g in N0P0K0 voucher variant case and 20.36 g in case of agrofield variant with azoth fertilization 90 kg/ha.

And also in this case the biggest value of average weight of cotton fibres realized in variant N90 with a fertilization on a constant phosphorus and potassium (P60K60) field- 20.36 g.

The average weight values of cotton fibres will increase through the azoth doses increasing to 17.1 g in fertilizered variant with 30 kg/ha N, to 19.69 g in the case of fertilizered variant with 60 kg/ha azoth and at 20.36 g in the case of fertilizered variant with 120 kg/ha (figure 6).

CONCLUSSIONS

1. The three species of cotton presented o good adaptability to weather conditions from Timisoara;

2. The increasing of chemical fertilizer doses with azoth positively influenced the weight increasing of the gross cotton;
3. The average weight of the gross cotton weight was bound by cotton productivity elements;
4. From results analysis, resulted that in case of the cotton seeding under the fertilization influence in the year 2008 in Timisoara weather conditions the biggest average value of the gross cotton weight realized on agrofield with (N0P60K60);
5. The average weight values of the cotton fibres increased through the azoth doses increasing.

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