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TYPE OF TRELLISING AND FOLIAR FERTILIZATION INFLUENCE ON YIELD AND QUALITY FOR NEW VARIETIES OF GHERKINS (*CUCUMIS SATIVUS* L.) WITH PARTHENOCARPIC FRUITING

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Abstract

This study was conducted during 2009-2010 in southern Dâmbovita County, in order to determine the impact of foliar fertilization on the production and its quality on five hybrids of cucumber gherkins: Promisa, Trilogy, Karaoke, Kybria and Componist and were obtained results with significant differences. Hybrids were planted in the same soil type and bearing the same climatic conditions, differences occurred in the production were attributed to variants studied. Immediately after establishment of experimental culture, fertilization were made every 10 days with application of bio-fertilizer as appropriate technological practices, also were performed observations and measurements on the production and quality of the varieties analyzed.

Key words: *Cucumis sativus L., fertilization, production, quality, gherkins.*

INTRODUCTION

In traditional agriculture losses of elements used in fertilization are important, especially in the N: P: K case, representing an important economic problem (Guerrero, 1998). Fractionation of fertilization and application in critical phases is recommended by most researchers (Cadahia, 2000; Guzmán, 2004; Pizarro, 1987). Foliar fertilization creates a positive impact on production in most varieties and hybrids (Solorzano, 2001).

Researches regarding the technology of cultivation gherkins cucumbers were conducted during 2009-2011 in the Tartasesti, Dâmbovita County, in the family-owned farm. Taking into account the pedoclimatic conditions of the south area of the country and climate conditions, the applied technology present a special importance for obtaining high productions and high quality. Foliar fertilization represents a rare piece of technology applied in the Lunguletu-Brezoaele vegetable basin area (which includes Tartasesti), solar crops of vegetables being established in small areas, the most important are field crops of vegetable, maintained on the traditional principles of agriculture.

Have been attempted combining two elements of technology, leading and trellising mode of the plant with foliar fertilization regime, the approach together of the two elements of technology in a area where protected vegetable crops have a low share will lay the foundation for future investment in the area (Petrescu, 1992; Popescu V and Atanasiu N., 2001)

Following research it was observed that the driving of the plant and foliar fertilization led to positive results on the production and quality of gherkins cucumbers, results that support the necessity of introducing in the technology of gherkins culture new elements that will come as a completion of higher genetic potential of new hybrids being subject of this study. The main purpose of this research represents the introduction of new elements of technology in parallel with the discovery of better hybrids adapted to the climatic conditions of the area.

Therefore, research will highlight the following aspect:

- obtaining high yields as a result of foliar fertilization and of the plant leading type on trellises;
- correlation between growing phased and total production under the influence of technology elements;
- productivity of analyzed hybrids.

MATERIALS AND METHODS

For biological material selection were taken into account first of all the necessity of using high temperature resistant varieties (the South area of the country and growing in protected areas) and very productive. For this were identified five RZhybrids (Kybria, Karaoke, Compomist, Trilogy si Promisa). The experience was polyfactorial one where experimental factors have been the following:

- Factor A – Hybrid:

A_1 – Kybria;
A_2 – Karaoke;
A_3 – Compomist;
A_4 – Trilogy;
A_2 –Promisa.

- Factor B – Leading mode:

B_1 – The plants were led up to a maximum height of 2.5 m. The first 30 cm were maintained without fruit, next 50 cm one fruit on each side sprig preserving all the fruits of main stalk nodes, and from ˜ 80 cm has not been intervened on the fructification.

B_2 – The first 50 cm were maintained without fruit, then for the next 50 cm were kept one fruit on side sprig and all the fruit on the main stem and from 100 cm height were kept absolutely all the fruit, as illustrated.

- Factor C – Foliar fertilization:

C_1 – CROPMAX: biological product according E.U.
C_2 – BIONAT PLUS: product approved by permit no. 391/16.03.2007.
C_2 – BIOLEAFZ: is a liquid plants stimulant.

RESULTS AND DISCUSSIONS

During 2009-2011 the results of plants growth concerning the stem growing height, number of sprigs of orders I and II, number of leafs, number of female flowers and number of related fruits appeared, showed some differences, thus demonstrating the influence of experimental factors on production and its quality.

As a result, at some variants the hight of plants was different and the number of fruits was influenced by the leading mode of the stem and applied foliar fertilizer. The differences were more pronounced at the beginning of vegetation, first floor of 30 cm and 50 cm high which has not have retained fruit having a obvious influence.

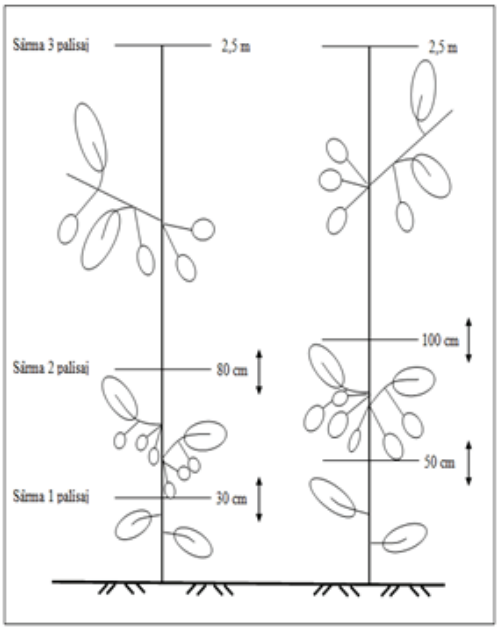

Figure 1. Trellising schemes used in research

Foliar nutrient solutions applied at the same stage of development of the plant, regardless of hybrid, had a positive influence on the vegetative growth for variant B_2 (50/100/250), plants having a strictly vegetative growth period until they reached the 50 cm height (compared with plants where it was applied variant B_1-30/80/250).

In 2009, concerning increase in height of plants, it was found that the variant B_2-50/100/250 had higher results compared to B_1-30/80/250.

In 2010, the trends were similar, hybrid reaching 234 cm led by the same scheme and foliar fertilized with the same solution.

Maximum height reached in 2010 is detained also by Compomist hybrid, but led to the scheme B_1-30/80/250 and foliar fertilized with CROPMAX.

CONCLUSIONS

Plants grown after B_1-30/80/250 leading mode showed less vegetative growth than plants grown after B_2-50/100/250 leading mode.

Compomist F1 hybrid reaches value of 239 cm in height in 2009, led by B_2-50/100/250 scheme and fertilized with BIONAT. In 2010 the results were similar.

Promisa F1 with the scheme B_1-30/80/250 determined a total of 41 fruits representing the maximum number and Trilogy F1 determined 19 number of fruits with the scheme B_2-50/100/250 in the year 2009.

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Table 1. Records of growing and developping of plants, Tartasesti, 2009

No.	VARIANT			Plant height (cm)	No. of tillers		No. of leafs	No. of flowers	No. of related fruits
	HYBRID	LEADING	FERTILIZATION		Tipe. I	Tipe. II			
1	A_1 - Kybria	B_1 (30/80/250)	C_1 CROPMAX	228	17	24	64	31	25
2	A_2 - Karaoke			215	12	19	69	29	27
3	A_3 - Compomist			232	14	20	65	38	31
4	A_4 - Trilogy			226	12	23	72	42	37
5	A_5 - Promisa			224	11	29	73	46	40
6	A_1 - Kybria	B_2 (50/100/250)		230	10	17	68	32	28
7	A_2 - Karaoke			238	9	19	70	34	25
8	A_3 - Compomist			232	12	22	61	31	24
9	A_4 - Trilogy			225	10	14	74	42	38
10	A_5 - Promisa			229	8	19	77	40	34
11	A_1 - Kybria	B_1 (30/80/250)	C_2 BIONAT	228	12	22	61	39	32
12	A_2 - Karaoke			236	9	17	67	35	29
13	A_3 - Compomist			210	13	21	64	38	35
14	A_4 - Trilogy			224	15	23	76	39	30
15	A_5 - Promisa			257	12	19	68	38	36
16	A_1 - Kybria	B_2 (50/100/250)		224	9	24	69	33	27
17	A_2 - Karaoke			236	11	19	66	31	29
18	A_3 - Compomist			239	7	23	63	29	25
19	A_4 - Trilogy			218	12	20	69	40	29
20	A_5 - Promisa			224	10	19	67	43	35
21	A_1 - Kybria	B_1 (30/80/250)	C_3 BIOLEAFZ	208	14	28	62	42	40
22	A_2 - Karaoke			222	10	30	69	29	24
23	A_3 - Compomist			235	16	25	70	36	32
24	A_4 - Trilogy			238	12	20	74	31	29
25	A_5 - Promisa			227	11	26	69	44	41
26	A_1 - Kybria	B_2 (50/100/250)		216	12	18	64	41	38
27	A_2 - Karaoke			221	8	14	72	34	29
28	A_3 - Compomist			219	11	21	71	28	21
29	A_4 - Trilogy			233	11	22	68	36	19
30	A_5 - Promisa			230	9	19	66	33	28

Table 2. Records of growing and developping of plants, Tartasesti, 2010.

Nr.	VARIANT			Plant height (cm)	No. of tillers		No. of leafs	No. of flowers	No. of related fruits
	HYBRID	LEADING	FERTILIZATION		Tipe. I	Tipe. II			
1	A_1 - Kybria								
2	A_2 - Karaoke			223	10	21	61	29	26
3	A_3 -	B_1		219	13	22	64	30	26
4	Compomist	(30/80/250)		238	15	18	67	36	28
5	A_4 - Trilogy			237	12	21	74	46	41
	A_5 - Promisa		C_1	225	16	27	70	43	39
6	A_1 - Kybria		CROPMAX	236	11	19	66	34	27
7	A_2 - Karaoke			223	9	18	68	33	28
8	A_3 -	B_2		211	11	24	64	29	26
9	Compomist	(50/100/250)		235	12	17	77	47	39
10	A_4 - Trilogy			228	10	21	79	44	33
	A_5 - Promisa								
11	A_1 - Kybria								
12	A_2 - Karaoke			229	11	24	60	38	31
13	A_3 -	B_1		234	16	21	66	36	32
14	Compomist	(30/80/250)		218	12	17	67	33	25
15	A_4 - Trilogy			220	10	22	72	40	38
	A_5 - Promisa		C_2	217	11	24	69	39	36
16	A_1 - Kybria		BIONAT	226	10	22	65	28	26
17	A_2 - Karaoke			232	10	21	64	35	31
18	A_3 -	B_2		234	8	24	60	31	24
19	Compomist	(50/100/250)		221	11	18	58	41	30
20	A_4 - Trilogy			209	9	21	65	38	33
	A_5 - Promisa								
21	A_1 - Kybria								
22	A_2 - Karaoke			223	12	31	68	40	27
23	A_3 -	B_1		225	11	27	71	31	25
24	Compomist	(30/80/250)		231	15	24	66	35	31
25	A_4 - Trilogy			214	11	22	72	32	28
	A_5 - Promisa		C_3	229	16	25	68	42	36
26	A_1 - Kybria		BIOLEAFZ	227	9	20	62	40	33
27	A_2 - Karaoke			224	12	17	63	32	32
28	A_3 -	B_2		233	10	19	73	26	25
29	Compomist	(50/100/250)		230	13	23	71	38	24
30	A_4 - Trilogy			229	8	17	70	39	32
	A_5 - Promisa								