CONTRIBUTIONS TO THE IMPROVEMENT OF THE ONION CULTIVATION TECHNOLOGY IN AN ECOLOGICAL SYSTEM

Cărbunar Mihai*, Popovici Mariana**

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea; Romania, e-mail: mariana_mediu@yahoo.com
**Agricultural Research and Development Station Oradea, 5 Calea Aradului St., Oradea, Romania, e-mail: scdaoradea@yahoo.com

Abstract

The cultivation of onion in an ecological system brings an additional value to the consumption bulbs. For the experimental culture we have chosen the realization of the chive and seeLSDing culture introducing the mulch and irrigation by dripping. Both means are meant to improve the quality as well as the production and at the same time these means being a prevention form of the onion's fly attack.

Key words: onion, chive, seeLSDing, mulch

INTRODUCTION

Cultivated for its nourishing value but mostly for its therapeutical effects the onion has been known since antique times. RegarLSDess of the season the onion is consumed all year round under different forms. The onion cultivated surface is of 3,4 million hectares and the obtained world production is of 64,1 million tons fact which tells everything about the importance given to this culture. In our country the onion is cultivated in all regions except the mountain areas.

During the years the culture technology suffered a series of changes all of them having as an aim the increase of production for the surface unit and the decrease of expenditure thus mechanization and chemicalization had been introduced at a large scale. These modern technologies lead to the diminishment of the specific taste and flavour and to a series of toxic waste in the finished product.

The system of ecological culture applied to the onion culture brings back the qualities of this vegetable to its real value.

The current work has as an aim to introduce a few improvements in the technology of the ecological culture of the onion.

MATERIAL AND METHOD

In the year 2010 in a microfarm in the North-West of the country (in Husasau de Tinca locality) 2 monofactorial experiences have been set in order to reach the proposed aims.

In the first experience the realization of the culture has been done with chive while at the second the onion seeLSDing was used.

The biological material be it chive, be it seeLSDing belonged to the Columbia hybrid, resistant to Fusarium. The bulbs have a spheroid form and a bronze like color.

Each experience had 5 experimental variants arranged in 3 repetitions, in subdivided blocks. The lot had a surface of $3m^2$. The data were processed through the analysis of the variant.

Experimental variants:

A – The chive set up culture

V_1- non – mulced (witness)

V_2- mulched with black foil

V_3 – mulched with transparent foil

V_4 – mulched with black foil plus irrigation

V_5 – mulched with transparent foil plus irrigation

B –The seeLSDing set up culture

V_1- non – mulched (witness)

V_2- mulched with black foil

V_3 – mulched with transparent foil

V_4 – mulched with black foil plus irrigation

V_5 – mulched with transparent foil plus irrigation

RESULTS AND DISSCUSIONS

At the two experiences the culture was set up in spring in different periods. The chive culture was set up at the beginning of March and the plantation of the seeLSDing was done in the miLSDSDe of April. The holes from the black foil and from the transparent foil had a diameter of 2 cm.

Harvesting the consumption bulbs was also different. The chive culture was harvested in the first decade of July while the seeLSDing culture was harvested in the second decade of August. The harvesting was done on variants and repetitions and the average of experiences and the statistic processing of the data are presented in table 1 and in table 2 respectively.

Table 1

Total onion production for the chive set up culture

Criterial no.	Variant	Absolute production Kg/m^2	Relative production %	± d Kg/m^2	Signifi cance
1	V_1Mt	1.93	100.00	0.00	-
2	V_2	2.35	121.76	+0.42	**
3	V_3	2.17	112.43	+0.24	*
4	V_4	2.68	138.86	+0.75	***
5	V_5	2.39	124.83	+0.46	**

LSD 5% = 0.23
LSD 1% = 0.38
LSD 0.1% =0.50

Table 2

Total onion production for the seeLSDing set up culture

Criterial no.	Variant	Absolute production Kg/m^2	Relative production %	± d Kg/m^2	Signifi cance
1	Vp_1 Mt	1.76	100.00	0.00	-
2	Vp_2	2.20	125.00	+0.44	**
3	Vp_3	1.92	109.09	+0.16	-
4	Vp_4	2.97	168.75	+1.21	***
5	Vp_5	2.65	150.50	+0.89	***

LSD 5% = 0.21
LSD 1% = 0.34
LSD 0.1% =0.48

If we analyze table 1 it can be noticed that all the variants have exceeded the production of the non – mulched witness, fact which emphasizes the high influence that the mulch had upon the onion production. If we add irrigation to the mulch the production increase is even more relevant. Thus for the V_4 variant – the mulch with black foil and irrigation the production increase in comparison with the witness was of 38,86% the difference being ensured statistically positive very significantly. The mulched variant with black foil but without irrigation registered a production superior to the witness with 4,4 tons/hectare, the difference from this has been ensured positive distinctly significantly.

The mulched variants with transparent foil have registered productions inferior to the mulched variants with black foil. For the V_3 variant - the difference towards the witness was of only 2,4 tons/hectare the latter being ensured positively statistically. And the V_5 variant - with

irrigation the increase was of 24,83% and the difference towards V_1 was ensured positive distinctly significantly.

In the case of the seeLSDing set up onion culture the introduction of the mulch and of the irrigation led to a production increase. In this case also the irrigation has influenced the production even more. If in the case of variant Vp_3 – mulched with transparent foil without irrigation the onion production was higher than the witness the difference was pretty small, it did not exceed the verge P= 5% not being statistically ensured. But the variant with mulch and with black foil and irrigation (Vp_4) has registered the absolute highest production of 29,7 tons/hectare.

The difference towards the Vp_1(Mt) variant was statistically ensured very significantly. Although Vp_5 has registered a production increase lower than Vp_4 the difference towards the witness was ensured statistically positive distinctly significanlty.

Another analyzed aspect was the quality of the onion bulbs after harvesting; at each variant and repetition the bulbs have been passed through 3 quality steps as follows: extra quality, 1st quality and 2nd quality. These aspects are presented in table 3.

Table 3

The quality of onion production set up by chive and by seeLSDing

Criterial no.	Variant	Total production of onion kg/m^2	Extra quality		The 1st quality from the total		The 2nd quality from the total	
			kg/m^2	%	kg/m^2	%	kg/m^2	%
1	V_1	1.93	1.12	58.08	0.37	19.17	0.44	22.79
2	V_2	2.35	1.75	74.46	0.41	17.44	0.19	8.08
3	V_3	2.17	1.49	68.66	0.35	16.12	0.33	15.20
4	V_4	2.68	2.28	85.07	0.27	10.07	0.13	4.85
5	V_5	2.39	1.95	81.58	0.24	10.4	0.20	8.36
6	Vp_1	1.76	0.83	47.15	0.41	23.29	0.52	29.54
7	Vp_2	2.20	1.51	68.63	0.37	16.81	0.32	14.54
8	Vp_3	1.92	1.34	69.79	0.34	17.70	0.23	12.50
9	Vp_4	2.97	1.95	65.65	0.88	29.62	0.14	4.71
10	Vp_5	2.65	1.68	63.39	0.57	21.50	0.40	15.09

It can be generally noticed that for all the variants the extra quality bulbs were predominant exceeding 50 % of the total production, except variant Vp_1(47,15). The highest percent of extra quality bulbs was met at variant V_4(85,07). In the case of non – mulched variants the poor quality of the bulbs was due greatly to the attack of the onion fly (delia antiqua) a dangerous pest to the onion culture. For the mulched variants the presence of the fly pest was not noticed as the soil close to the bulbs was isolated

with foil (the female fly laying its eggs on the soil from the immediate neighbourhood of the onion plant).

The first quality bulbs have registered percents between 10.4% from the total at variant V_5 and 23,29% for the Vp_1 variant. The second quality type of onion was prtesent in very small percents except the non – mulched variants with 29,54% at variant Vp_1 and 22,79% at V_1. It can be noticed that even when the mulch was used the black foil is superior to the transparent foil in what the quality of the bulbs is concerned. This is due to the apparition of weeds under the transparent foil during the first part of the vegetation; later these weeds are suffocated by the high temperatures existing under the foil.

CONCLUSIONS

The research related to the improvement of the onion culture technology in ecological system has allowed the issue of the following conclusions:

1. The onion production obtained in ecological system reaches the productions obtained by the classical vegetable culture.
2. The introduction of the mulch with foil in the culture technology has got positive influences in what the production is concerned as well as in what the aspect of the onion bulbs' quality is concerned.
3. The research related to the mulch in the onion culture had emphasized the superiority of the black foil in comparison with the transparent foil.
4. The irrigation through dripping associated with the mulch, these two methods applied to the chive set up or seeLSDing set up onion culture have led to a substantial increase of the bulb production.
5. The application of the mulch in the onion culture represents an ecological means to prevent the onion fly attack (Delia antiqua).

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