RESEARCH ON THE INFLUENCE OF PHASIAL FERTILIZATION ON AUTUMN CAULIFLOWER CULTURES IN ECOLOGICAL SYSTEM

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Abstract

Phasial fertilization is an important element in culture technology, both conventional and organic system and Fertilization was and is still studied by many researchers. Complete nutrition during the growing plants to organic farming is possible with a number of products that are not synthesized in organic chemicals, fertilizers must come from certified organic or traditional small farms.

Key words: ecological culture, phasial fertilization, extra-radicular fertilization

INTRODUCTION

Of the cabbage-like vegetables, the cauliflower occupies a special place because of the quality of cuisine derived from it. In Romania it is grown in all areas, but there are some areas where cauliflower receives a favorable microclimate and where it is mainly grown. One such area is found in NV country, the Black Cris basin.

In addition to other factors of vegetation, mineral nutrition is an essential element in successful culture. Chaux and Foury (1994) provide specific mineral consumption (kg/t product) to cauliflower in average values for N - 4.9, for P2O5 - 1.6, K2O - 5.5, CaO - 2.3, MgO - 0.4 and S - 0.2. I Buzo et al. (1996) based on detailed studies of physiology emphasizes the physiological role of mineral substances with favorable effects on plant body.

Inadequate supply of minerals causes symptoms, which are indicators to identify them (Buzo I. et al. 1996). In the ecological culture of cauliflower Victor Renaud and Ch. Dudouet recommended balanced fertilization with mineral fertilizers without nitrogen exaggerate and avoid fresh organic fertilizers. For cauliflower crop fertilization can be used in organic solid or liquid organic fertilizer from certified organic farms or small traditional farms. There can be used as fertilizers various plant extracts and minerals, all certified ecologically.

MATERIAL AND METHOD

The experiment aims to demonstrate the effect of phasial fertilization on the yield of autumn cauliflower, in ecological culture. The research was

done in 2011 in a vegetable micro located in NW Romania with 3.8% humus soil. Biological material was the hybrid of cauliflower Freedom. To achieve the proposed goals there was made a monofactorial experience with 6 variants in 3 repetitions. Each variant had 50 plants. In all variants the basic fertilization was made using 30 t/ha of semi decomposed manure.

Experimental variants:

V_1Mt-unfertilized (only basic fertilization)

V_2-fertiliztion in accordance to conventional culture technology

V_3-fertilization in 2 phases with Agriful

V_4-fertilized in 2 stages with Agriful+a Nano active stage+a stage of soak poultry litter

V_5-fertilized only extraroot with Nano active 2 stages +one stage Tekamin Max+one stage of Tekamin brix

V_6-fertilized with Agriful+2 sage of soak poultry litter+a Nano active stage+a stage of Tekamin Brix.

RESULTS AND DISCUSSIONS

Except the fertilizer segment, other works were conducted under cultivation technology both in conventional and in organic systems. Table 1 shows the influence of phasial fertilization on production early in the two culture systems. Analyzing the overall early production of cauliflower it is noted that all variants have achieved higher production control. Thus the best early production was recorded V6 with a production increase of 50.81% compared to the control difference is highly significant statistically assured positive. Significant increases were obtained and conventional version and the V4 it made compared to the control to 2.9 t / ha more cauliflower, the difference being statistically assured significantly distinctive. The lowest early production (excluding sample) was to V3, exceeding witness only 17.21%, the difference was statistically significant positive provided

Table 1

Early production of cauliflowe, Husasău de Tinca 2011

No.	Variant	Absolute production (kg/ha)	Relative production (%)	±d (kg/m^2)	Semnification
1	V1 Mt.	1,22	100,00	0,00	-
2	V2	1,67	136,88	+0,45	XXX
3	V3	1,43	117,21	+0,21	X
4	V4	1,76	144,26	+0,54	XXX
5	V5	1,51	123,77	+0,29	XX
6	V6	1,84	150,81	+0,62	XXX

LSD5%=0,15
LSD1%=0,22
LSD0,1%=0,30

Another parameter analyzed in the experiment was the total production of cauliflower. The average repetitions for each variant on the total amount of cauliflower obtained is presented in Table 2. Influence of phasial fertilization is more pronounced in case of total production than for early production. Compared to the sample all variants obtained yield increases of between 19.90% and 81.40%. At the conventional variant V2 there was obtained with 17.6 t/ha more cauliflower than at the control, the difference being statistically assured as very significantly positive. Out of the ecological variants the fertilized V_5 only extraroot obtained the lowest production increase of 19.9%. The difference from the control sample was ensured as statistically positive significantly distinct.

Table 2

Total production of cauliflower, Husasău de Tinca 2011

No	Variant	Absolute production (kg/ha)	Relative production (%)	±d (kg/m^2)	Semnification
1	V1 Mt.	2,16	100,00	0,00	-
2	V2	3,92	181,48	+1,76	XXX
3	V3	2,71	125,49	+0,55	XXX
4	V4	3,25	150,46	+1,09	XXX
5	V5	2,59	119,90	+0,43	XX
6	V6	3,47	160,64	+1,31	XXX

LSD 5%=0,26
LSD1%=0,34
LSD0,1%=0,49

The quality of production is the last item analyzed, the data quality concerning cauliflower inflorescences are presented in Table 3. This table shows the distribution of production of each variant in three quality levels. The highest share of all versions is the extra quality, being between 60.51% and 85.30% at V3 version to V6. On conventional version, although absolute production is the highest, the extra quality is only 72.70%. Flowers of first quality were below 1 kg/m2, which represented the percentage 11.38% to variant V_4 and 30.62% to V3. The second quality represented less than 10% of the total production of all variants. They ranged from 2.89% at V_6 to 8.89% at V5.

No.	Variant	Absolute production (kg/ha)	Extra quality of total		Ist quality of total		IInd quality of total	
			kg/m^2	%	kg/m^2	%	kg/m^2	%
1	V1 Mt.	2,16	1,64	75,92	0,34	15,14	0,18	8,34
2	V2	3,92	2,85	72,70	0,79	20,15	0,28	7,15
3	V3	2,71	1,64	60,51	0,83	30,32	0,24	8,87
4	V4	3,25	2,73	84,00	0,37	11,38	0,15	4,62
5	V5	2,59	1,78	68,72	0,58	22,39	0,23	8,89
6	V6	3,47	2,96	85,30	0,41	11,81	0,10	2,89

CONCLUSIONS

Research on cauliflower culture fertilization in conventional and ecological system has allowed the development following conclusions:

1. Independent of the type of culture, conventional or organic phasial fertilization is very important to obtain high production.
2. By the phasial fertilization at conventional culture production can increase up to 81.48% while the organic variants increase is up to 60.64%.
3. Extraroot fertilization is not sufficient to achieve expected production there is also needed the soil fertilization.
4. Phasial fertilization influence on early production is lower in all variants compared to total production.
5. Combined fertilization (soil and extraroot) with organic and mineral fertilizers in ecologic system had the greatest positive influence on the production of extra quality.

REFERENCES

1. Apahidean Al. S.,Maria Apahidean, 2004,Cultura legumelor şi ciupercilor, Ed. AcademicPres, Cluj-Napoca
2. Berar V.,2006, Legumicultură,. Ed. Mirton, Timişoara
3. Buzo I Voican Viorica şi colab.1996. Curs de Fiziologia Plantelor.Centrul Editorial Poligrafic USAMV, Bucureşti
4. Brejea R., 2009, Tehnologii de protecție sau refacere a solurilor. Editura Universității din Oradea
5. Brejea R., 2010, Ştiința solului: îndrumător de lucrări practice**.** Editura Universității din Oradea
6. Brejea R., 2011, Practicum de tehnologii de protecție a solurilor. Editura Universității din Oradea
7. Ciofu Ruxandra, N.Stan, V. Popescu, Pelaghia Chilom, S Apahidean, A.Horgoş, V. Berar, K. F. Lauer, N. Atanasiu, 2003,Tratat de Legumicultură, Ed. Ceres, Bucureşti
8. Chaux Cl., Cl. Fourry, 1995, Production legumieres. TEC-DOC, Paris
9. Davidescu, D. şi colab. 1981, Agrochimie .EDP. Bucureşti
10. Indrea D.şi colab. 2007. Cultura legumelor.Ed. Ceres Bucureşti
11. Mănuțiu D. 2002. Legumicultură .Ed. AcademicPres,Cluj-Napoca
12. Renaud V. et Ch.Dudouet 1988. Le potager par les mthodes naturelles.Imprimerie Clerc
13. ***2004 Ghid legislative pentru agricultura ecologică