RESEARCHES REGARDING THE BEHAVIOUR OF SOME ONION CULTIVARS IN THE VEGETABLE AGRO-SYSTEM IN SOUTHERN ROMANIA

CERCETĂRI PRIVIND COMPORTAREA UNOR CULTIVARURI DE CEAPĂ ÎN AGROSISTEMUL LEGUMICOL DIN SUDUL ROMÂNIEI

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Abstract. *In order to introduce new onion cultivars in a vegetable agro-system, studies regarding their behavior in the respective pedoclimate conditions are necessary. This document is presenting the results obtained after developing a study, in the south part of the country, at 13 onion cultivars with brown bulb, 5 cultivars of red onions and 5 onions cultivars that are planted in autumn. As regards the first group of cultivars, big differences in production have been recorded (9.4-28 t/ha). Among the early hybrids group the biggest production has been recorded by Musica F1 (82 t/ha) and from the midlate cultivars: Vaquero F1 (77.4 t/ha), Manas F1 78,6. t/ha), Sedona F1 (78.3 t/ha). As regards the red onion cultivars, there have not been recorded important differences in production (2.1-4.2 t/ha), the hybrids being more productive than the varieties, having a better capacity of storage. Among the onion varieties planted since autumn, the Swift (62.5 t/ha) and Radar (57.4 t/ha) varieties have been distinguished themselves. Diamant variety do not adapt to the autumn planting, over 75% of the plants have not resisted over the low temperatures during winter. The results obtained will be useful both for the farmers in order to make a decision in choosing a cultivar and for elaborating the List of recommended varieties.*

Key words: onion, vegetable agro-system, recommended varieties

Rezumat. *In vederea introducerii, in cadrul unui agrosistem legumicol, a noi cultivaruri de ceapa, este nevoie de efectuarea unor studii privind comportarea acestora in conditiile pedoclimatice respective. Lucrarea de fata prezinta rezultatele obtinute in urma efectuarii unui studiu, in partea de sud a tarii, la un numar de 13 cultivare de ceapa cu bulbul maro, cinci cultivare de ceapa rosie si cinci cultivare de ceapa care se seamana din toamna. In cazul primei grupe de cultivare au fost inregistrate diferente mari de productie (9,4 – 28 t/ha). Din grupa hibrizilor timpurii cea mai mare productie a inregistrat-o Musica F1(82 t/ha) iar din grupa cultivarelor semitardivi: Vaquero F1 (77,4 t/ha), Manas F1(76,6 t/ha), Sedona F1(76,4 t/ha). La cultivarele de ceapa rosie nu s-au inregistrat diferente mari de productie (2,1- 4,2 t/ha), hibrizii fiind mai productivi decat soiurile, avand si o capacitate mai buna la pastrare. Dintre soiurile de ceapa semanate din toamna s-au remarcat Swift (62,5 t/ha) si Radar (57,4 t/ha). Soiul Diamant nu corespunde pentru semanatul din toamna, peste 75% din plante nu au rezistat la temperaturile scazute din timpul iernii. Rezultatele obtinute vor folosi atat fermierilor pentru a lua o decizie privind alegerea cultivarurilor, cat si pentru intocmirea Listei soiurilor recomandate.*

Cuvinte cheie: ceapă, agrosistem legumicol, soiuri recomandate

INTRODUCTION

One of the measures concerning the continuously growing onion production is introducing the most performant cultivars in the culture, cultivars obtained at present by only few of the biggest seed producing companies in the world. It is known that a performant cultivar (especially the hybrids) can increase the production with over 30%. Once Romania joined the UE, the Romanian farmers can grow without difficulty any cultivar obtained in any part of the globe. This explains why at present we are introducing in the culture varieties/hybrids of onion obtained in Europe, USA, Japan taking into consideration only the publicity made by the authors and the seeds sellers. In the countries with performant agriculture there is the List of recomanded seeds, list that have been made as a result of the study made regarding the cultivars in the pedoclimatic conditions from this country. At present, our farmers cultivate over 90% foreign onion varieties/hybrids. Part of these are suitable for the pedoclimatic conditions existing in our country, but many do not give the expected results. Some large companies, such as Bejo Zaden from Netherlands, offer for sale over 20 onion breeders this year, 30 of carrot and 49 of cabbage. At present we are trying with the help of the farmers from our country to make a continuous study regarding this great onion array. These large companies, that have real producing hybrids industry, change the array at short time periods, that is why this testing activity should be made continuously.

MATERIAL AND METHOD

The study of the array has been made at SC Oferta Bob SRL from Tartasesti, Dambovita county. The array has included 13 varieties and hybrids of onion with brown bulb, five with red bulb and five varieties which are seeded in autumn. The testing has been made on a black carth soil, it has been made a basis fertilization with 600 kg/ha Cropcare complex, it has been seeded using the scheme: 4 rows (20 cm distance between the rows) on the bed each having 2 rows (8 cm between the rows), providing a number of 750 thousand plants/ha. All the maintenance works have been made, the irrigation has been made by dripping, providing a humidity level of 80% of IUA from seeding to cropping. There have been made biometric observations and determinations during the vegetation period, there has been determined the average production/ha for all the variants. There has been tested the conservation capacity of every breed.

RESULTS AND DISCUSSIONS

The 13 onion varieties and hybrids with brown bulb have been studied by comparison to the Diamant variety, the most productive Romanian variety for some decades (tab.1). In comparison to the witness it has been obtained great differences in production between 9,4 t/ha and 28 t/ha, which represents in percentage a growth in production between 17,4 % and 51,8%. The period of vegetation for these cultivars is different. The early hybrids Musica F1 and Exacta F1 are very productive, the production being sold easily in a period without fresh onion (the first half of june), for a much better price in comparison to the semilate or late cultivars. Among the hybrids with good production but also storage capacity we can mention: Vaquero F1 (77,4 t/ha), Manas F1 (78,6 t/ha), Sedona F1 (78,3 t/ha), Pandero F1 (76 t/ha), Daytona F1 (77,2

t/ha). The Leone variety has realized a production of 77,5 t/ha, but it doesn't provide a uniformity in the form and size of the bulbs as the hybrids have.

Table 1

The behaviour of a number of 13 onion cultivars with brown bulb in 2007 year in the conditions of the southern part of the country

Nr. crt	Variety/ hybrid	Prod. (t/ha)	Relative product (%)	Dif. of prod. (tons)	Maturity (days)	Origin
1.	Musica F1	82,00	151,85	28,00	90	Bejo-Holland
2.	Exacta F1	79,00	146,29	25,00	98	Seminis-Holland
3.	Columbia F1	74,40	137,77	20,40	105	Seminis-Holland
4.	Daytona F1	77,20	142,96	23,20	115	Bejo-Holland
5.	Manas F1	78,60	145,55	24,60	114	Bejo-Holland
6.	Tamara F1	71,80	133,96	17,80	110	Bejo-Holland
7.	Sedona F1	78,30	145,00	24,30	115	Bejo-Holland
8.	Leone	77,50	143,52	23,50	130	Bejo-Holland
9.	Vaquero F1	77,40	143,33	23,40	120	Nunhems-Holland
10.	Pandero F1	76,00	140,74	22,00	118	Nunhems-Holland
11.	Ariana	63,40	117,41	9,40	120	Romania
12.	Briliant	65,60	121,48	11,60	125	Romania
13.	Diamant Mt.	54,00	100,00	-	122	Romania

The Diamant variety has been exceeded by the current hybrids obtained by great companies that produce vegetable seeds (Bejo Zaden, Nunhems, Asgrow). Both the capacity of production that is lower than of the hybrids, and the quality of the bulbs make that this variety to be cultivated in our country on only 5% of the onion cultivated surface. Regarding the behaviour of the cultivars of red onion, the productions are lower than the ones of brown bulb. There have been taken into study two varieties and two hybrids, these being compared to the Romanian variety Delicioasa (tab.2).

Table 2

The behaviour of five cultivars of red onion under the conditions of the southern country – 2007

Nr. crt.	Cultivar	Prod. (t/ha)	Relative prod. (%)	Dif. of prod.	Maturity (days)	Origin
1.	Redwing F1	66,80	106,71	4,20	111	Bejo-Holland
2.	Red Zeppelin F1	65,70	104,95	3,10	110	Asgrow-USA
3.	Red Baron	64,7	103,35	2,10	110	Bejo-Holland
4.	Robin	59,90	95,68	-2,70	108	Bejo-Holland
5.	Delicioasa Mt.	62,60	100,00	-	115	Romania

The differences in production are not that big, the Redwing F1 hybrid realizes a production of 66,8 t/ha (with 8% in comparison to the witness), the hybrid Red Zeppelin F1 (65,7 7/ha) and the variety Robin has achieved a lower production than the witness variety Delicioasa. Both the Red baron and Delicioasa varieties have a greater production capacity but they don't have a good storage capacity. In order to stagger the onion production for a longer period of time there has been started the practice of seeding in autumn, the green onion being obtained in May and the bulbs in June. There

have been taken into study four varieties that are resistant to the low temperatures during the winter time. They have been compared to the variety Diamant, this being more sensitive to the low temperatures during winter (tab.3).

Table 3

The behaviour of 5 cultivars of onion seeded in

Nr. Crt.	Cultivar	Prod. t/ha	Relative prod. %	Dif. of prod. t/ha	Origin
1.	Swift	62,50	233,21	35,70	Bejo
2.	Radar	57,40	214,18	30,60	Bejo
3.	Sibir	51,20	191,04	24,40	Bejo
4.	Glob Yellow Danvers	41,80	155,97	15,00	Seminis
5.	Diamant Mt.	26,80	100,00	-	Romania

The Swift variety has given the best results in production, achieving a loss lower than 10% during winter, while the Diamant variety has had a loss of over 75%. The great productions that are possible to be achieved invalidate the productions of 25-30 t/ha that are quoted in the most vegetable growing studies, productions that have been obtained 20-25 years ago. With a production of 62,5 t/ha and with a good selling price, the Swift variety is achieving a great profit. The Radar varietyfollows Swift both in production and in resistance to the low temperatures during winter.

CONCLUSIONS

In order to obtain early productions (the harvest in May-June) the Swift and Radar varieties (with passing through winter) and the early hybrids Musica F1 and Exacta F1 have achieved very good productions.

The hybrids Vaquero F1, Manas F1, Sedona F1, Pandero F1, Daytona have given very high productions exceeding the Romanian variety Diamant with differences between 22 t/ha and 24,6 t/ha.

The Leone variety has obtained a very good production of 77,5 t/ha but it doesn't ensure a uniformity in shape and size of the bulbs as it is ensured by the hybrids.

Among the red onions cultivars, the Redwing F1 hybrid has obtained the greatest production (66,8 t/ha) also having a very good storing capacity. The Delicioasa variety is a productive variety (62,6 t/ha), has a good tolerance for high temperatures, being adivsed for consumption in pure state.

The great productions that are possible to achieve (over 75-80 t/ha) invalidate the productions of 25-30 t/ha that are quoted in the most part of the vegetable growing studies, productions that have been obtained 20-25 years ago.

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