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UTERINE PRESERVATION OF MOTHER ROOTS OF A TABLE BEET ROOTS AND SEED YIELD DEPENDING ON THE PERIOD OF SOWING AND DENSITY OF MOTHER PLANT

Already presented the results of research on the effect of density growing of a table beet varieties of Bahrianyi variety type of Erfurt on the safety and productivity of seeds of mother roots. The higher yield of seed already secured the queen cells that were grown at sowing seeds in the first and third decades of June and density of 100-150 plants ths/ha. For storage of root crops in the winter sowing seeds and plant density had no significant effect.

Keywords: *a table beet, mother roots, density cultivation, sowing time, safety, the yield of seeds*

Introduction. To grow the seeds of a table beet important today is to develop techniques that would ensure a high rate of seed multiplication and preservation and display of agronomic traits class laid breeders. Growing seeds is a complex process. Modern technology is growing it should provide maximum performance at minimum cost. Achieving this goal is possible only subject to the high technological requirements for tillage, fertilization, optimum sowing, care of crops, harvesting, storage in the winter.

For all agricultural plants plays an important role density at which they grow. Ensuring optimum number of plants per unit area is the key to not only getting a high yield product of roots, but also the maximum output uterine roots. Recommended density of roots to grow trademark does not coincide with the density in which uterine grow.

Analysis of the latest researches and publications. All previous studies were performed with varieties of round or rounded flap-root form and from table beet with a conical shape, works almost was not. Some authors [1] recommended plant density form of table beet on uterine target within 200-250 ths/ha. Others believe that the density of 200 ths/ha in non-standard part of the harvest is dominated outgrown roots and therefore the density of growing plants should be increased to 400 tha/ha [2]. The majority of researchers find the optimal density at the level of 300-400 ths/ha [3-7].

The definition of a plant density and optimum sowing the seeds of table beet, which would provide the highest yield of mother of roots after winter storage, there is a pressing task, the more that scientific developments of Erfurt variety type in Ukraine was not performed.

The purpose of research is determination the safety of mother roots after winter storage and seed yield depending on the optimum sowing seeds and growing density of mother plants of a table beet.

Material and methods. The study was carried out in a vegetable crop rotation on the laboratory of seed growing and seeding at Institute of vegetables and melons of NAAS (2008-2011).

Soil is black earth alkaline medium of loam. Humus content in the topsoil to 3.4 % reaction of the medium is slightly acidic (pH – 5.8-6.1). Power of humus layer is 60-80 cm.

Field research was conducted according to the "Methodology of research affairs in vegetables and melons" [8], statistical data processing carried out by the "Methodology of field experiments" [9]. In researchers was used a table beet of conical form the variety of Bahriayi variety type of Erfurt. Studied four density cultivation of plants: 100, 150, 200 and 250 ths/ha. Seeds were sown in three periods the second decade of May, the first and the third week of June. Repeated in the experiment is four times. Area sown area 21 m², accounting - 14 m² plots

systematic placement. Root for long-term storage containers laid in the tabs of polyethylene in the second week of November.

Research results. Already it has been found that under cultivation mother roots of table beet of conical varieties (Bahrianyi), effective density is 150 ths/ha of sowing (II decade of May and I decade of June), which has provided a standard yield of roots 30.1-35.8 t/ha, yield of mother roots – 17.2-18.1 t/ha (41-47 %) [10].

Accounting for the preservation of roots during spring selection has shown that mother plants, which were derived from the second and third sowing, preserved in terms of 2008/2009 best control option (table 1). So, if after the first period of sowing (II decade of May) output suitable for planting of root ranged from 62.3 to 66.2 %, in embodiments, the second (I decade of June) and third (III decade of June) sowing, the figure ranged from 67.5 to 91.0 % and from 64.9 to 81.8 %, respectively.

Table 1

Safety of a table beet roots varieties of Bahrianyi in the winter, depending on the sowing of seeds and plant density

Density of plants	Output of mother plants after storage, %			
	2008/2009	2009/2010	2010/2011	Average
Sowing seeds in the II decade of May (control)				
100	62,5	91,7	84,5	79,6
150	66,2	94,5	85,9	82,2
200	62,3	97,1	84,8	81,4
250	64,7	95,1	85,1	81,6
Sowing seeds in the I decade of June				
100	67,5	92,1	85,2	81,6
150	91,0	91,0	86,4	89,5
200	74,6	92,0	85,7	84,1
250	86,9	91,8	86,2	88,3
Sowing seeds in the III decade of June				
100	81,5	93,0	87,6	87,4
150	78,2	91,3	86,7	85,4
200	81,8	94,2	85,4	87,1
250	64,9	94,7	86,1	81,9
SSD _{0,5}	2,8	2,0	2,1	

Spring selection of roots in the 2009/2010 showed that survival of mother roots derived from the second and third sowing was similar to the performance of the control options. Thus, if the control output suitable for planting root crops ranged from 91.7 to 97.1 %, in the second and third versions of sowing - from 91.0 to 92.1 % and from 91.3 to 94.7 %, respectively. The same trend was observed during storage of roots fallopian 2010/2011 years - from 84.5 to 85.9 % in the control, from 85.2 to 86.4 and from 85.4 to 87.6 % in the second options and third sowing. That is, it can be concluded that the survival of roots in winter sowing seed and plant density did not significantly influence.

The yield of seed (2008-2011) of beet root varieties of Bahrianyi depending on sowing density and seed mother plants found advantages of density 100-150 ths/ha., sowing in the I decade of June - third compared to the other options studied (Table 2).

Note option sowing seeds in the III decade of June (density of 100 plants ths/ha), which in 2008 provided the highest yield. This result is due, primarily, to a greater weight of mother roots that under adverse conditions, and gave them an advantage. Against the background of severe weather conditions positively manifest advantage phasically young plants. According to the data yield of seed of mother roots of the third sowing (III decade of June) is significantly higher as a whole by a factor, and for each particular density.

Table 2

**Influence of seeding density and mother plants of beet root varieties of Bahrianyi
on yield and seed quality (2008-2011)**

Sowing time (factor A)	Density of plants, ths/ha (factor B)	Average weight of mother of roots, g	The yield of seed, t/ha				
			2008	2009	2010	2011	average
The first term of sowing is II decade of May (control)	100	364	2,29	1,15	1,96	1,56	1,74
	150	302	2,52	1,14	1,94	1,54	1,79
	200	274	2,59	1,09	1,85	1,47	1,75
	250	261	2,58	1,19	2,02	1,61	1,85
The second term of sowing is I decade of June	100	327	2,74	1,41	2,40	1,91	2,11
	150	307	2,81	1,11	1,89	1,50	1,83
	200	248	2,76	1,05	1,79	1,42	1,76
	250	252	2,99	1,03	1,75	1,39	1,79
The third term of sowing is III decade of June	100	232	3,15	1,48	2,52	2,00	2,29
	150	212	2,90	1,47	2,50	1,99	2,21
	200	182	2,75	1,31	2,23	1,77	2,02
	250	175	2,52	1,28	2,18	1,73	1,93
SSD ₀₅ A			0,20	0,11	0,12		
HIP ₀₅ B			0,16	0,13	0,15		

Thus, the optimal conditions of weather for years have been only a trend of the advantages of later sowing of control, and by the heat of the arid conditions and the trend have turned into a significant advantage. Against the background of severe conditions of weather positively manifest advantage phisically young plants. The yield of seed sowing in the III decade of June is significantly higher as a whole by a factor and for each particular density.

The research identified quality of seed by ISO 7160:2010. Weight of 1000 seeds first term ranged 17.0-17.9 g at density 150 ths/ha - 18.4 g. In the third term of 1000 seeds weight slightly decreased (15.7-16.0 g). This is because the roots of this period were smaller, shrub seed morphological parameters I and II deadlines sowing. The correlation coefficient between the height and weight of seed shrub seed was ($r = 0,74$). Vigor and laboratory germination did not significantly respond to sowing and plant density.

Conclusions. The research found no influence of sowing seeds and growing plants density on survival of root vegetables in the winter. Greater yield of seed were characterized of mother root derived from options sowing seeds in the I and III decade of June and density of 100-150 ths/ha.

References

1. Рекомендації по вирощуванню високих урожаїв насіння овочевих культур / [Ф.А. Ткаченко, В.М. Лісцин та ін.]. – К. : Урожай, 1973. – С. 28-37.
2. Романов А.В. Сроки посева и густота растений при выращивании маточников свеклы столовой / А.В. Романов // Овочівництво і баштанництво. – Харків, 2003. – Вип.48. – С. 179-183.
3. Горовая Т.К. Влияние сроков посева и густоты стояния столовой свеклы на урожайность и выход маточных корнеплодов / Т.К. Горовая, А.Д. Витанов, А.В. Антонов // Овочівництво і баштанництво : міжвідом. темат. наук. зб. / Інститут овочівництва і баштанництва УААН. – Х., 2002. – Вип. 47. – С. 295-300.
4. Дудник С.А. Залежність урожаю столових буряків від строків сівби і густоти насадження в Лівобережних районах Лісостепу УРСР / С.А. Дудник, О.В. Антонов, К.К. Плешков // Овочівництво і баштанництво : міжвідом. темат. наук. зб. / Інститут овочівництва і баштанництва УААН. – Х., 1981. – Вип. 26. – С. 3-7.

5. Ящук А.И. Индустриальная технология выращивания столовых корнеплодов / А.И. Ящук, Л.А. Шевченко // Информационный листок. – К. : Урожай, 1985. – С. 1.
6. Сучасні технології в овочівництві / За ред. К.І. Яковенка. – Х. : ІОБ УААН, 2001. – 128 с.
7. Ермаков Н.Ф. Механизованная технология производства корнеплодов / Н.Ф. Ермаков, Ю.Л. Колчинский, Л.А. Михалченков // Картофель и овощи. – 1978. – № 9. – С. 38.
8. Методика дослідної справи в овочівництві і баштанництві / За ред. Г.Л. Бондаренка, К.І. Яковенка. – Х. : Основа, 2001. – 369 с.
9. Доспехов Б.А. Методика полевого опыта / Б.А. Доспехов. – М. : Агропромиздат, 1985. – 351 с.
10. Корнієнко С.І. Оптимізація елементів технологій вирощування буряка столового Ерфурського сорто типу / С.І. Корнієнко, О.М. Могильна, В.В. Могильний // Вісник Харківського нац. аграр. ун-ту ім. В.В. Докучаєва. – Х., 2012. – № 12. – С. 109-115.

Анотація

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Збереженість маточних корнеплодів буряку столового та вихід насіння в залежності від строків сівби та густоти маточних рослин

Наведено результати досліджень впливу густоти вирощування буряку столового сорту Багрянний Ерфуртського сорто типу на збереженість та урожайність насіння маточних корнеплодів. Більший вихід насіння забезпечили маточники, вирощені при сівбі насіння у першій та третій декадах червня та густоті рослин 100-150 тис.шт./га. На збереженість корнеплодів у зимовий період строки сівби насіння і густина рослин не чинили істотного впливу.

Ключові слова: буряк столовий, маточні корнеплоди, густина вирощування, строк сівби, збереженість, урожайність насіння

Аннотация

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Сохранность маточных корнеплодов свеклы столовой и выход семян в зависимости от срока посева и густоты маточных растений

Приведены результаты исследований влияния густоты выращивания свеклы столовой сорта Багрянный Эрфуртского сорто типу на сохранность и урожайность семян маточных корнеплодов. Больший выход семян обеспечили маточники, выращенные при посеве семян в первой и третьей декадах июня и густоте растений 100-150 тыс.шт./га. На хранение корнеплодов в зимний период сроки посева семян и густота растений не оказывали существенного влияния.

Ключевые слова: свекла столовая, маточные корнеплоды, густота выращивания, срок сева, сохранность, урожайность семян