

PRODUCTIVITY OF INITIAL FORMS MULTISEMINAL FEED BEETS

Results over of researches are brought from the estimation of the productivity of initial multiseминаl fertility forms and selections from them. On the basis of application of various methods estimations are selected perspective standards with high-frequency of valuable genotypes. Cross-correlation dependences of indexes of the productivity are set between initial forms and their descendants.

Keywords: *feed beets, selection, multiseминаl forms of beets, productivity*

Introduction. Multiseминаl and monoseeds sorts and hybrids with biological and economic descriptions, which provide their high yield and fitness for growing after intensive technologies, are applied in industry of feed beets [1].

Multiseeds forms, in the selection of feed beets, can serve as a feedstock for monoseeds of high quality populations and used in quality complements pollinations at creation of monoseeds hybrids on sterile basis [2].

Creation of high-performance feed beets is related to the difficult plant-breeding process [3]. Multiseeds materials, during many ten of years, yielded to the plant-breeding working at populations' level, their basis were different forms of mass and group selections. heterozis a selection requires creation, estimation and selection of components at linear level which is the mortgage of stable recreation of hybrid combinations on productive properties and maintenance of homogeneity on biomorphological signs. The basic method of receipt of lines is inbreeding which in modern plant-breedings researches is appraised on new [4].

A method to inbreeding allows conducting differentiation of difficult cross pollinations populations and distinguishing many excellent one from other lines in the homozygous state, and also distinguishing valuable signs which have recession nature. Inbreeding is a forming factor which allows decomposing populations on the row of botanical forms [4, 5].

The purpose of our researches was to learn initial paternal forms and and new to create on their basis multiseминаl pollinations (MP) are components of hybrids of feed beets after the complex of signs and date estimation of their productivity.

Materials and methods. Experiments conducted on Verhnyachskaya experienced-selective station during 2008-2013yy. Multiseминаl sorts and hybrids of different levels to the genome of domestic and foreign selection served the initial forms of feed beets. On the areas of the pollicross crossing individual selections are conducted with next insuht, saturant, analyzing and pair crossing.

Work with material was conducted in plant-breedings nurseries and previous grade test on the chart of one factor experience. Materials were sown by three-string areas long 10 meters, by the registration area of 13,5m², in a three-multiple reiteration. Area of feed of plants – 45×22sm. The ingredients of the productivity estimated on a background a group standard, in which three was included recommended ISB sorts Donor, Sonnet, Centaur. Determinations of content of dry matter carried out in obedience to recommendations [6], technological internals of root crops - on the automatic transfer line of "Venema". Finding is treated by the method of analysis of variance [7].

Results and discussion. During great while, on Verhnyachskaya ESS plant-breeding work is conducted from a search and receipt of new initial forms of feed beets. Collected collection of multiseминаl, monoseeds, sterile and fertility materials - components for creation of hybrids. Taking into account that for the effect of heterosis the high indexes of the own productivity matter paternal to the component, conducted hybridization of multiseминаl lines of pollinations on the chart of «policross». On results previous a grade test carried out the selection of materials after

categories is a superelite, elite, an elite is polarization. Individual selections are conducted on drought-resistingness, firmness to farinaceous dew and unfavorable factors of environment. Got seminal material from 100% of a lot of rostcov garden-stuffs and studied fecundity in the conditions of severe isolation. In a table a 1 brought estimation over of quality of a bush and seed (2010y) and indexes of the productivity and content of ash ingredients at initial forms and their descendants (2011y).

Table 1

Description of multiseed forms of feed beets, 2010-2011

№ insulator and c gradesample	Origin of material but color of root crops	Mass of seed from 1 a bush, g	Indexes of quality of seed, 2010			Absolute indexes of the productivity, 2011			Content of ash ingredients, mg/ekv	
			energy of germination of garden-stuffs, %	likeness, %	mass is 1000 garden-stuffs, gs	productivity, т/and	content of dry matter, %	content of sugar, %	K	Na
11	MP cen white	106	85	95	18,5	55,7	9,79	8,46	4,05	2,52
16	MP cen × bim white	112	86	97	20,0	57,1	11,5	9,88	4,17	3,03
17	MP dim × cen white	102	85	94	18,3	56,9	10,9	8,91	4,78	2,10
19	MP bim white	87	86	96	16,9	55,6	9,96	8,54	4,80	2,39
24	MP ек x век yellow.	101	84	95	15,6	57,0	10,8	9,48	4,53	2,00
26	MP век yellow	99	87	98	15,8	55,7	9,89	8,83	5,12	3,40
27	MP сн x век yellow	100	86	98	16,1	57,3	11,6	9,66	4,63	2,46
29	MP Ur x Ек yellow	95	84	94	15,9	57,8	10,9	9,61	5,18	3,13
33	MP Os x Dn pink	105	86	97	18,1	58,4	11,7	9,81	4,44	2,15
35	MP Dn pink	121	83	96	20,1	56,9	10,6	9,57	4,96	2,97
37	MP Dn x Mn pink	101	84	95	15,5	56,9	10,8	9,58	5,99	3,09
38	MP Roger pink.	108	85	95	19,1	55,5	9,79	8,75	4,68	3,01
43	MP Dn x Kc pink.	126	85	96	21,1	57,6	10,7	9,62	4,44	2,91
44	MP Kc x Dn pink.	121	87	99	22,1	58,2	11,5	9,78	5,03	2,45
47	MP Kc. pink.	105	86	97	18,6	55,6	9,69	8,97	5,40	2,31
50	MP Pc. pink.	112	86	98	19,5	55,4	9,79	8,55	4,61	2,66
standard						52,4	9,05	8,38	5,15	3,10
LED _{05%}						2,3	0,6	0,9		

On the absolute indexes of the productivity two distinguished 2 highly-productive gradesample (№33 and №44), in which content of dry matter and sugar in root crops presented according to 11,7 and 9,81% and 11,5 and 9,78%, productivity 58,4, and 58,2t/ga. For the repeated study 9 perspective numbers are selected, candidates in MP. A rejection between initial forms and their descendants after the productivity and content of dry matter is driven to the table 2.

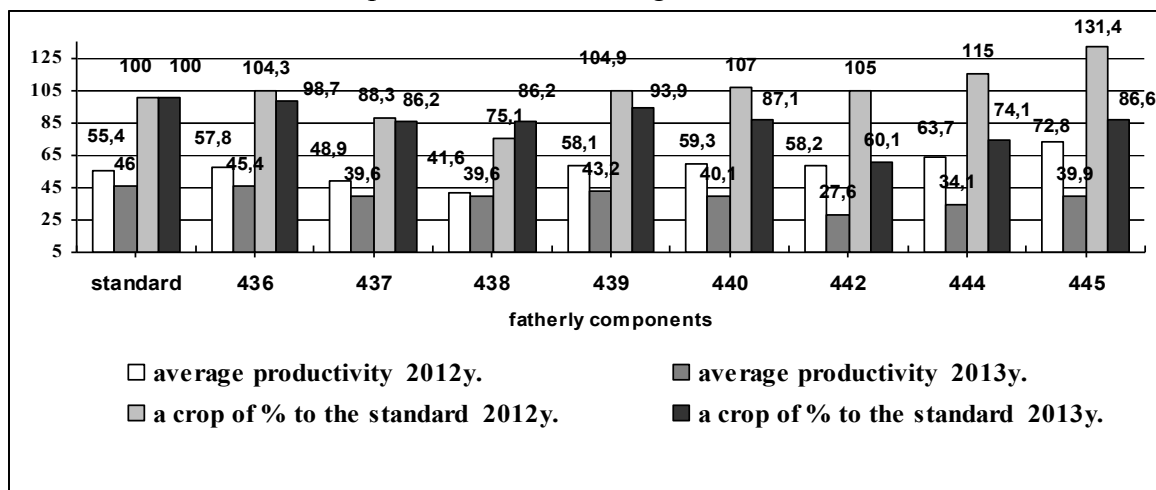
The coefficients of correlation specify in the presence of close cross-correlation connection between initial forms and their descendants. The increase of indexes of the productivity is set in descendants comparatively with pre-product. So combination №9 exceeds an initial form after the productivity on +2,8 t/ga, №6 on maintenance a dry matter on +1,77%.

Table 2

Estimation of indexes of the productivity of initial forms and their descendants, 2011

№ combination	Origin materials	Productivity of root crops, t/ga		± to initial form	Content of dry matter, %		± to initial form
		initial form	posterity		initial form	posterity	
1	MP cen × bim white	55,7	57,1	+1,4	9,79	11,51	+1,72
2	MP dim × cen white	55,6	56,9	+1,3	9,84	10,94	+1,10
3	MP ек x vek yellow.	55,7	57,0	+1,3	9,83	10,84	+1,01
4	MP чн x vek yellow	55,4	57,3	+1,9	9,89	11,61	+1,72
5	MP Уг x Ек yellow	55,9	57,8	+1,9	9,79	10,92	+1,13
6	MP Os x Dn pink	56,9	58,4	+1,5	9,95	11,72	+1,77
7	MP Dn x Mn pink	55,5	56,9	+1,4	9,75	10,84	+1,09
8	MP Dn x Kc pink.	55,6	57,6	+2,0	9,69	10,73	+1,04
9	MP Kc x Dn pink.	55,4	58,2	+2,8	9,79	11,52	+1,73
coefficient of correlation, r		0,98			0,96		

During 2012-2013yy. multiseeds paternal components and their descendants studied on the indexes of the productivity (productivity, content of dry matter and sugar) and on maintenance ash ingredients (K, Na). On the basis of initial forms (436, 439, 445) the row of combinations of multiseed pollinations (MP) is formed with the increased collection of dry matter of from 4,6 to 5,2 t/ga, to sugar from 3,8 to 4,6, productivity they were here presented by 46,7-54,4 т/and. On fig. 1, 2 the estimation over of initial paternal forms is brought.

**Fig. 1 Indexes of the productivity (absolute and % to the standard)**

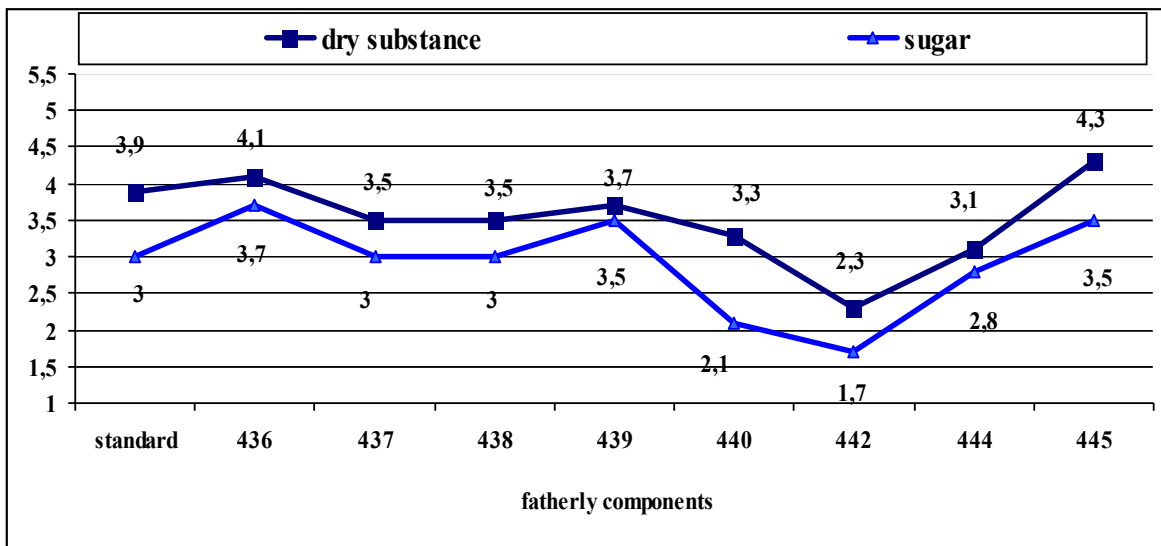


Fig. 2 Indexes of the productivity, t/ga, in 2013

On results previous grade test on rice 3 the productivity of candidates is driven to multiseedling pollinations (MP).

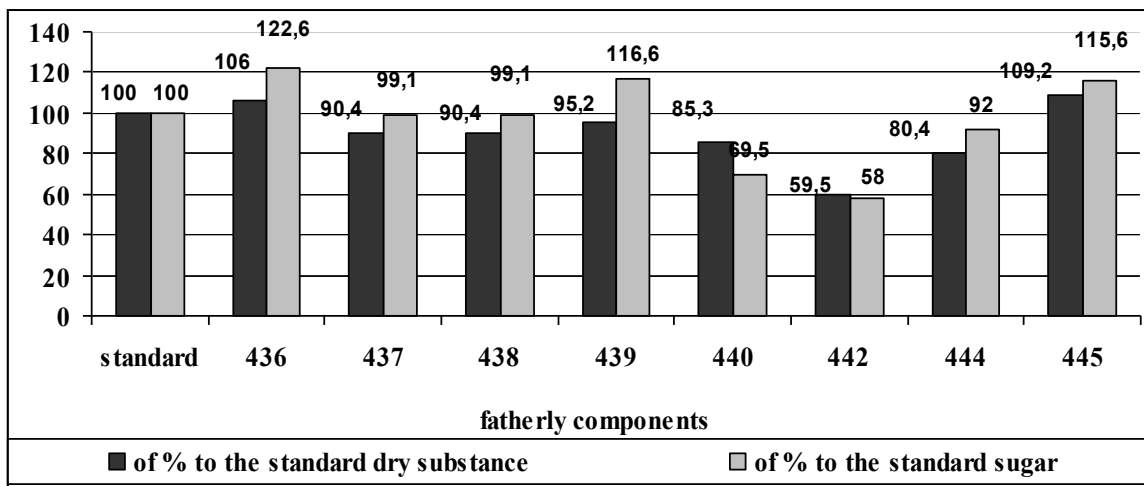


Fig. 3 Productivities of paternal components, % to the standard in 2013

As an analysis of multiseedling forms showed after the productivity, only one number (455) substantially exceeded a group standard at $LED_{05\%} = 2,3$ (fig. 4).

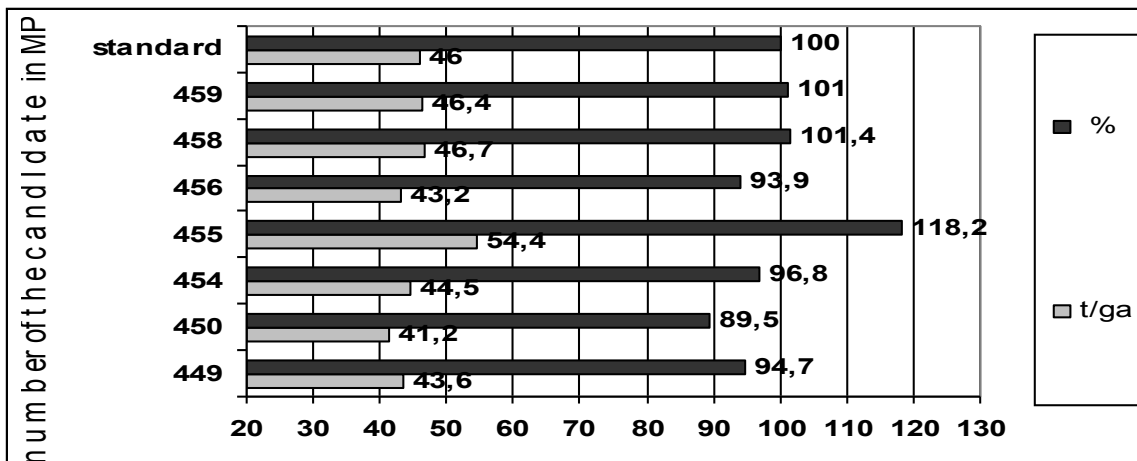


Fig. 4 Productivities of multiseedling forms, in 2013

After collection of dry matter in root crops the number of MP registered 449, which on the basis of estimations of two years of test of a grade considerably exceeded a group standard and it is considered perspective (rice. 5).

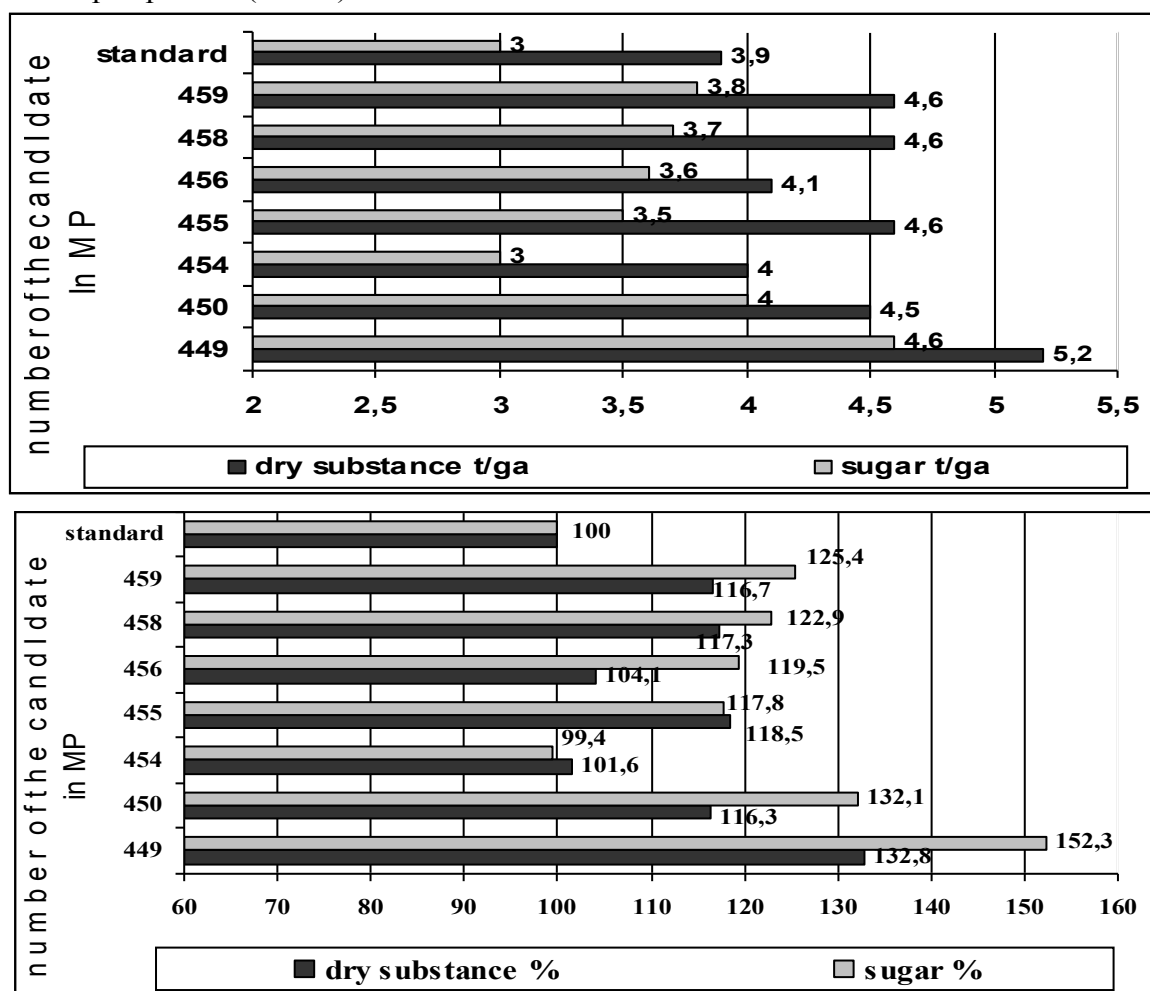


Fig. 5 Productivity of candidates in MP, in 2013

Numbers of MP 455, 458, 459 this index was contained at high level which grounds to attract them as a paternal component to forming of perspective hybrid combinations.

Conclusions. For years researches (2008-2013yy.) the new feedstock of multiseeds fertility forms is selected got the method of breaking up of foreign and domestic commercial materials. The estimation of the own productivity confirms them genetic heterogeneity and wide genetic basis. The results of high yield in descendants confirm successful pre-election of these lines, as perspective for a selection from them candidates in MP.

On the estimations of previous test it is distinguished three the best number (455, 458, 459), which on the indexes of the productivity for certain exceeded a group standard after collection of dry matter and sugar.

Cross-correlation dependence of indexes of the productivity between initial forms and descendants, selected from them, does not yet testify to their possible combination fitness, taking into account the indexes of the productivity of initial paternal forms only. Initial multiseed forms and got line – pollinations, got from them, it is necessary to check and estimate on the size of general (GCA) and specific combination ability (SCA).

With the purpose of maintenance of economic-useful signs and creation of complementing lines - multiseed pollinations the best standards of initial forms and candidates in MP will be recreated in sowing of reproduction for hybridization and study in crossing after the method of topcross, where monoseeds CMS of line of feed beets will serve testers.

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Анотація

Дубчак О.В.

Продуктивність вихідних форм багатонасінних кормових буряків

Наведено результати досліджень з оцінки продуктивності вихідних багатонасінних фертильних форм та доборів з них. На основі застосування різноманітних методів оцінки відібрано перспективні зразки з високою частотою цінних генотипів. Встановлено кореляційні залежності показників продуктивності між вихідними формами та їх нащадками.

Ключові слова: кормові буряки, селекція, багатонасінні форми буряків, продуктивність

Аннотация

Дубчак О.В.

Изучение исходных многосемянных форм кормовой свеклы по показателям продуктивности

Приведены результаты исследований по оценке продуктивности исходных многосемянных фертильных форм и отборов из них. На основе применения различных методов оценки отобраны перспективные образцы с высокой частотой ценных генотипов. Установлены корреляционные зависимости показателей продуктивности между исходными формами и их потомками.

Ключевые слова: кормовая свекла, селекция, многосемянные формы свеклы, продуктивность