UDC 633.152:631.527 https://doi.org/10.31867/2523-4544/0230

EVALUATION OF SOURCE MATERIAL FOR SWEET MAIZE BY THE MAIN BREEDING CHARACTERISTICS

O. L. Haidash, B. V. Dziubetsky, V. Yu. Cherchel, L. O. Musatova
State Enterprise Institute of Grain Crops NAAS, 14 Volodymyr Vernadskyi St., Dnipro, 49009, Ukraine

Topicality. *The sweet maize grain differs from other maize subspecies in its high sugar content: the grain accumulates 2 times more mono- and disaccharides, 20 times more dextrins, and almost 2 times less starch, with a crude protein content of 10.4–14.9 %. The main direction of sweet maize breeding is to develop the high-yielding interline hybrids that are suitable for mechanized harvesting of cobs, and resistant to main diseases and pests, as well as characterized by high technological grain qualities. To effectively solve these challenges, it is necessary to know the morphological and biological characteristics and properly select the source material (self-pollinated lines).* ***Purpose****. To study of morphological and biological characteristics of sweet maize lines.* ***Materials and methods****. Visual phenological observations; laboratory-field method was used to determine morphobiological characteristics of plants; measuring and weighing method – to determine yield and metric characteristics of plants; mathematical and statistical method – to determinate validity of results, variability of traits, correlational dependence of traits; analysis of variance; comprehensive assessment of morphobiological and economically valuable characteristics of inbred lines.* ***Results****. According to analysis of sugar composition, the studied samples revealed a high content of monosaccharides (glucose, fructose, etc.) in the lines HOL-1 $_{1411111}$, HOL-1 $_{1411211}$, DKS346 $_{114}$, DINAR346 $_{141}$, HOL-19 and disaccharides (sucrose, lactose, maltose) in HOL-1 $_{1411211}$, SVAN1212 $_{123}$, HOL-19. These indicators are important in the deep processing of sweet maize for the food industry an individual product and as one of the components in the culinary products. These mono- and disaccharides are used to produce sweets, sweet or alcoholic drinks, and sauces. The following DINAR346 $_{141}$, HOL-1 $_{1411511}$ lines had a low level of sucrose content: 3.7 and 4.6 %, respectively.* ***Conclusions.*** *According to the results of research on the breeding material of sweet maize, it was identified the self-pollinated families with high taste qualities (7 points), such as HOL-1 $_{1411111}$, HOL-1 $_{1411211}$, DKS346 $_{114}$, HOL-4 $_{1411141}$ and HOL-19, which will be involved to develop competitive high-yielding hybrids with a high sugar content in grain, increased taste and technological qualities in the sweet maize breeding programs in the future.*

Key words: *sweet corn, line, sugar content, seed productivity, grain taste*

Introduction. Sweet maize is a special subspecies for vegetable purposes. It is a valuable food, fodder and industrial crop. Its grain is a valuable raw material for the canning, food concentrate and confectionery industries [1].

The grain of sweet maize differs from other maize subspecies in its high sugar content: mono- and disaccharides are accumulated twice more than in dent maize, dextrins are 20 times more and starch is almost twice less, while the crude protein content in the grain is 10.4–14.9 %. The highest protein concentration in the grain is observed 10 days after pollination, and on 20–22 days after pollination, protein concentration decreases by 50–60 %. In contrast, the starch content has a diametrically opposite dependence: in the stage of milk ripeness, its amount is 15–25 %, and in the stage of full ripeness, 50–60 %. The sweet maize ripens in a short period of time, during which its taste deteriorates due to a significant loss of sugar content and an increase in starch, protein, dextrin and fat content [2–3].

Sweet maize is a natural source of several

Author information:

Oleksandr L. Haidash, *Candidate of Agricultural Sciences, Head of the Laboratory of Plant Physiology and Breeding Methods,* https://orcid.org/0000-0001-6736-0367

Borys V. Dziubetskyi, *Doctor of Agricultural Sciences, Professor, Academician of the National Academy of Agrarian Sciences of Ukraine, Honoured Worker of Science and Technology of Ukraine, Head of the Cereal Breeding Department,* https://orcid.org/0000-0003-2955-232X

Vladyslav Yu. Cherchel, *Doctor of Agricultural Sciences, Corresponding Member of the National Academy of Agrarian Sciences of Ukraine, Director of SE Institute of Grain Crops of the NAAS of Ukraine,* https://orcid.org/0000-0002-0429-4961

Liubov O. Musatova, *Candidate of Agricultural Sciences, Researcher at the Laboratory of Plant Physiology and Breeding Methods,* https://orcid.org/0000-0001-7054-7237

vitamins: B1 (*thiamine hydrochloride*) is an essen-tial coenzyme in carbohydrate metabolism and nerve impulse transmission; B_2 (*riboflavin*) is part of flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD), which are mainly required for metabolism; B_6 (*pyridoxine hydrochloride*) is necessary for enzymes involved in metabolism, as well as for the synthesis of neu-rotransmitters and hemoglobin; nicotinamide or PP (*pellagra preventing*) is a water-soluble vitamin; it is necessary for many oxidation reactions in living cells and is a part of the cofactors NAD(H) and NADPH(H) and glucose tolerance factor. The significant content of vitamin C (ascorbic acid), which is necessary for the growth and function of bones, skin, teeth, capillary endothelium and the immune system, and tocopherol in oil, containing essential amino acids and dextrins, was noted. All these substances are useful and necessary for the human body. In terms of nutrition and taste, sweet maize is one of the top vegetable crops. The energy value per 100 g of milk-ripening grain consists of 334-340 to 530 kcal [4–7].

Sweet maize is distinguished from other subspecies not only by its high sugar content, but also by a more favourable combination of all the carbohydrates that influence the grain taste. Most valuable are the water-soluble polysaccharides, which are easily absorbed by the body. The best grain flavour is achieved at a grain moisture content of 68–72 %. Grain moisture content within these limits is an indicator of the technical ripeness of maize grain, in which its taste is most fully manifested. At the same time, it is characterised by the relationships of the biochemical process in the accumulation and redistribution of nutrients and, above all, by the high content of mono- and disaccharides in the structural complex of sugars. We can conclude that the genetic control of grain taste is based on the biochemical composition of sugar and characterised by a high ratio of monosaccharides to sucrose. The maize taste is also dependent on endosperm density and pericarp thickness, which accounts for approximately 5.5 % of the total grain weight. The pericarp thickness depends on the growing conditions, grain placement on the ear, and storage conditions [3, 8].

Maize breeding based on heterosis requires the continuous development and evaluation of new homozygous lines. The sweet maize breeding focuses on high-yielding interline hybrids, which are suitable for mechanised ear harvesting, resistant to major diseases and pests, and have high technological grain qualities. Solving these problems depends on knowledge of morphological and biological characteristics and properly selected source material (self-pollinated lines) [9–11].

Purpose. To study the morphological and biological characteristics of sweet maize lines.

Materials and Methods. The experimental part of the work was carried out in the fields at SE Institute of Grain Crops of NAAS in 2019–2020. Observations and records were carried out in the breeding and control nurseries. During 2019–2020, a collection of self-pollinated families of sweet maize synthesised on the basis of sister hybrids obtained by crossing the best lines originated by inbreeding commercial hybrids of different ecological, geographical and genetic origin was studied. For comparison, a mid-early line RKTS 21 is used as the standard (St). For the biochemical analysis, we used grain in technical ripeness obtained by controlled pollination after its fixation by rapid freezing. The content of the main sugar fractions was determined by the method of D. I. Lisytsyn [12] and calculated as a percentage of dry matter (DM).

Results and Discussion. The main breeding phenological, biometric and other indicators of self-pollinated lines were studied. Based on the duration of the period "seedlings – silking" and "seedlings – technical ripeness of grain", the studied samples were classified as mid-ripening. The variation in plant height was within 142.0–168.0 cm in 2019 and 167.5–207.5 cm in 2020, with an average of 156.9 and 190.5 cm, respectively (Table 1). The coefficient of variation increased during the study years from 4.6 % in 2019 to 6.2 % in 2020, which indicates the relative stability of the studied samples.

It should be noted that the ear insertion height also varied significantly both in specific lines and over the years of research. On average, it was 47.9 cm in 2019 and 67.7 cm in 2020, with indicators ranging from 31.0 to 59.5 cm and from 51.5 to 78.5 cm, respectively, by year.

Main structural elements of seed productivity in self-pollinated maize lines were determined in the course of the study: ear length and diameter, number of kernel rows per ear and number of kernels per ear row, ear weight (Table 2).

Table 1. Plant height and ear insertion height of self-pollinated maize lines, cm

Lines	Plant height, cm			Ear insertion height, cm		
	2019	2020	$\bar{x}^{**}$	2019	2020	$\bar{x}^{**}$
HOL-1 $_{1411111}$	142.0	167.5	155.6	32.0	58.5	46.8
HOL-1 $_{1411211}$	159.0	192.0	173.6	54.5	77.0	65.5
HOL-1 $_{1411511}$	149.0	185.5	157.3	47.5	66.5	55.6
HOL-4 $_{1411141}$	150.0	199.5	166.9	41.0	64.0	49.5
DKS346 $_{114}$	161.5	207.5	189.5	58.5	78.0	71.9
(DK346C *NAR) $_{141}$	157.5	187.0	165.6	53.0	78.5	63.7
PN 112	165.5	201.5	178.6	50.0	70.0	57.9
CN369 $_{114}$	168.0	207.0	171.8	59.5	76.5	59.8
CBAN1212 $_{123}$	158.0	185.5	165.2	31.0	51.5	41.9
HOL-11	156.5	180.5	171.5	49.5	68.0	57.8
HOL-19	159.0	181.5	163.3	50.5	56.5	53.6
RKTS21 ***(St.)***	160.0	190.5	175.2	50.0	65.0	57.5
Average, ($\bar{x}$)	156.9	190.5	169.0	47.9	67.7	56.7
Coefficient of variation (V), %	4.6	6.2	6.9	19.1	13.2	16.5
Error *	4.8	8.0	7.8	6.1	6.0	6.1

*Note: *Data on the error of the arithmetic mean are presented in the form mt $_{0.05}$ where, m - the error of the arithmetic mean, $t_{0.05}$ is the Student's coefficient at the level of significance of 0.05. $\bar{x}$** – average.*

Table 2. Structural elements of seed productivity in self-pollinated lines, average for 2019–2020

No.	Lines	Ear length, cm	Ear diameter, cm	Number of kernel row, pcs	Number of kernels per row, pcs	Ear weight, g	Grain weight per ear
1	HOL-1 $_{1411111}$	14.7	3.3	12	24	67.4	40.4
2	HOL-1 $_{1411211}$	13.9	3.2	12	22	58.1	34.8
3	HOL-1 $_{1411511}$	13.3	4.4	14	20	55.7	33.4
4	HOL-4 $_{1411141}$	13.1	3.2	12	24	68.5	41.1
5	DKS346 $_{114}$	11.8	3.5	14	18	88.6	53.2
6	(DINAR346) $_{141}$	11.3	3.1	12	22	62.2	37.3
7	PN 112	14.3	3.3	14	28	73.2	43.9
8	CN369 $_{114}$	9.5	4.6	12	16	38.2	22.9
9	CBAN1212 $_{123}$	9.9	3.7	12	15	48.6	29.2
10	HOL-11	15.7	4.1	10	24	110.7	66.4
11	HOL-19	15.6	4.8	14	28	130.3	78.2
12	RKTS21 ***(St.)***	13.6	3.7	10	22	52.1	31.3
13	Average, ($\bar{x}$)	13.1	3.7	12.3	21.9	71.1	42.7
14	Coefficient of variation (V), %	15.0	15.2	11.1	18.1	35.9	35.9
15	Error *	0.6	0.2	0.4	1.1	7.4	4.4

*Note: *Data on the error of the arithmetic mean are presented in the form mt $_{0.05}$ where, m - the error of the arithmetic mean, t $_{0.05}$ is the Student's coefficient at the level of significance of 0.05.*

The highest ear weight was observed in lines HOL-11 – 110.7 g and HOL-19 – 130.3 g, the lowest was in CBAN1212 $_{123}$ – 48.6 g, and CN369 $_{114}$ – 38.2 g. According to the number of kernel rows, the differences between the lines were within 10–14 kernel rows. As for other indicators, there was a significant difference between the lines in ear diameter (from 3.1 to 4.8 cm), number of kernels in a row (from 15 to 28 pcs) and kernel weight per ear (from 22.9 to 78.2 g). It should be noted that there is a high positive correlation (r = 0.85) between the number of kernels per row and the ear length and a weak positive correlation between the ear diameter and the number of kernel rows (r = 0.20).

According to the sugar content in terms of dry matter, the studied self-pollinated lines were characterized by a wide range of sugar content from 12.1 to 19.5 mg, % (Table 3).

The highest content of total sugars was observed in the lines HOL-1 $_{1411111}$ (18.1 %), HOL-1 $_{1411211}$ (19.5 %) and DKS346 $_{114}$ (18.5 %), and their content was relatively low in the lines PN 112 (12.1 %) and HOL-1 $_{1411511}$ (12.6 %). It should be noted that 50 % of the lines had this indicator significantly higher than the lines of the RKTS21 standard (13.9 %).

Table 3. Sugar content in grain of sweet maize inbred lines at technical ripeness, average for 2019–2020

No.	Lines	Total sugar, mg, %	Monosaccharides, mg, %	Disaccharides	Sucrose, mg, %	Ratio of monosaccharides to sucrose
1	HOL-1 $_{1411111}$	18.1	7.0	11.0	3.8	1.8
2	HOL-1 $_{1411211}$	19.5	6.3	13.2	6.5	1.0
3	HOL-1 $_{1411511}$	12.6	3.9	8.7	4.6	0.8
4	HOL-4 $_{1411141}$	14.6	3.4	11.2	7.5	0.5
5	DKS346 $_{114}$	18.5	6.7	11.9	4.8	1.4
6	DINAR346 $_{141}$	15.8	4.0	7.9	3.7	1.1
7	PN 112	12.1	3.0	9.1	5.8	0.2
8	CN369 $_{114}$	13.5	3.1	9.8	6.4	0.5
9	CBAN1212 $_{123}$	17.8	3.8	14.0	9.7	0.4
10	HOL-11	13.8	3.6	10.2	6.3	0.6
11	HOL-19	17.9	4.8	13.2	7.9	0.6
12	RKTS21 ***(St.)***	13.9	3.0	10.9	7.2	0.4
13	Average, ($\bar{x}$)	15.7	4.4	10.9	6.2	0.8
14	Coefficient of variation (V), %	15.7	32.2	16.7	27.5	58.0
15	Error *	0.7	0.4	0.5	0.5	0.1

*Note: *Data on the error of the arithmetic mean are presented in the form mt $_{0.05}$ where, m – the error of the arithmetic mean, $t_{0.05}$ is the Student's coefficient at the level of significance of 0.05.*

Our analysis of the sugar composition of the studied samples revealed a high content of monosaccharides (glucose, fructose, etc.) in HOL-1 $_{1411111}$, HOL-1 $_{1411211}$, DKS346 $_{114}$, DINAR346 $_{141}$, HOL-19 and disaccharides (sucrose, lactose, maltose) in HOL-1 $_{1411211}$, CBAN1212 $_{123}$, HOL-19. These parameters are important in the deep processing of sugar maize for the food industry as a standalone product and as the components of culinary products. These mono- and disaccharides are used to produce sweets, sweet and alcoholic drinks, and sauces. The lines are characterised by low sucrose content: DINAR346 $_{141}$ and GOL-1 $_{1411511}$ – 3.7 and 4.6 %, respectively.

The taste of sweet maize grain is primarily dependent on the ratio of monosaccharides to sucrose and the pericarp thickness. The pericarp thickness is determined visually by the degree of wrinkled maize grain in the full ripeness [13]. The grain taste of self-pollinated lines was determined in technical ripeness by tasting boiled ears. The taste of the grain was evaluated on a nine-point scale: 9 – very tasty, 7 – tasty, 5 – medium tasty, 3 – tasteless, 1 – very tasteless[14]. High taste qualities (7 points) were found in the lines HOL-1 $_{1411111}$, HOL-1 $_{1411211}$, DKS346 $_{114}$, HOL-4 $_{1411141}$ and HOL-19, in which the ratio of monosaccharides to sucrose ranged from 1.0 to 1.8. The lowest taste qualities (3 points) were noted in PN 112 lines, with low monosaccharide content and their ratio to sucrose within 0.2, due to the superiority of sucrose over monosaccharides in the complex of total sugar. According to the results of the tasting, the rest of the families were classified as medium-tasty (5 points).

Conclusions. The following conclusions can be drawn based on the results of studies of sweet maize breeding material, a set of morphological and biological parameters and taste:

- according to the duration of the period of seedlings - silking and seedlings - technical ripeness of grain, the studied samples were classified as mid-ripening;

- high positive correlation (r = 0.85) between the number of kernels per row and the ear length and a weak positive correlation between the ear diameter and the number of kernel rows (r = 0.20);

- self-pollinated families with high taste qualities (7 points) were identified: HOL-1 $_{1411111}$, HOL-1 $_{1411211}$, DKS346 $_{114}$, HOL-4 $_{1411141}$ and HOL-19, which will be further involved in the sweet maize breeding programmes to develop competitive high-yielding hybrids with high sugar content in grain, improved taste and technological qualities.

References

1. Tracy, W. F. (1993). Sweet corn, *Zea mays L*. Genetic improvement of vegetable crops; E. Kalloo, B. O. Bergh Eds. Oxford: Pergamon Press, P. 777–807. [Great Britain].
2. Ushkarenko, V. O., Lykhovyd, P. V. (2016). The yield of sweet corn depending on the depth of shelf plowing, the background of nutrition and thickening of plants under drip irrigation. *Visnyk Sumskoho natsionalnoho ahrarnoho universytetu «Ahronomiia i biolohiia»* [Bulletin of the Sumy National Agrarian University "Agronomy and Biology"], *9 (32).* 50–54. [in Ukrainian]
3. Koltunov, V. A., Koval, A. V. (2016). Chemical composition of corn grain of the sugar-milk-wax stage of ripeness and its changes during the ripening process. *Tovaroznavchyi visnyk: zb. nauk. pr*. [Commodity Bulletin: coll. scie. papers], *9.* 122–129. [in Ukrainian]
4. Burlai, H. K. (1997). Selection of edible corn. *Biuleten Instytutu zernovoho hospodarstva* [Bulletin of the Institute of Grain farming], *3*. C. 37–44. [in Ukrainian]
5. Shevchenko, S. M. (2011). Indifference and variability of the quality of sweet corn seeds during storage. *Visnyk Dnipropetrovskoho derzhavnoho ahrarnoho universytetu* [Bulletin of the Dnipropetrovsk State Agrarian University], *2.* [electronic resource]: Access mode: https://dspace.dsau.dp.ua/handle/123456789/2431. [in Ukrainian]
6. Barabash, O. Yu., Taranenko, L. K., Sych, Z. D. (2005). *Biolohichni osnovy ovochivnytstva* [Biological bases of vegetable growing]. Kiev: Aristeus. 344. [in Ukrainian]
7. Koval, A., Didukh, N. (2014). Economic and commodity assessment of sweet corn varieties zoned in Ukraine. *Tovary i rynky* [Goods and markets], *2.* 61–69. [in Ukrainian]
8. Pashchenko, Yu. M. Cherchel, V. Yu. Kyrpa M. Ya. et al. (2010). *Kukurudza tsukrova – hibrydy, tekhnolohiia vyroshchuvannia, nasinnytstvo: nauk.-metod. rek.* [Sweet corn – hybrids, growing technology, seed production (scientific and methodical recommendations) [In-t zernovoho hospodarstva NAAN Ukrainy, Dnipropetrovsk, 24 p. [in Ukrainian]
9. Parii, M. F., Parii, Ya. F., Makarchuk, O. S., Parii, A. F. (2003). *Selektsiia tsukrovoi kukurudzy na vysoku yakist produktsii* [Selection of sweet corn for high product quality. Modern problems of genetics, biotechno-logy and plant selection]. *Sovremennye problemy henetyky, byotekhnolohyy y selektsyy rastenii: materialy II mizhnar. konf. molodykh uchenykh.* Procee-dings of the *Modern problems of genetics, biotechnology and plant breeding:* II intern. conf. young scientists] (pp. 200–201). 2003, Institute of plant breeding named after V. Ya. Yurieva, Kharkov. Ukraine. [in Ukrainian]
10. Makarchuk, M. M. (2017). *Udoskonalennia metodiv krosbrydinhu dlia pidvyshchennia efektyvnosti vyrobnytstva hibrydnoho nasinnia kukurudzy* [Improvement of crossbreeding methods to increase the efficiency of production of hybrid corn seeds] (Cand. Agric. Sci. Diss.) Umanskyi nats. un-t sadivnytstva. Uman. Ukraina. [in Ukrainian]
11. Palamarchuk, V. D. (2020). *Naukovo-teoretychne obgruntuvannia tekhnolohii vyroshchuvannia ta adaptyvnosti hibrydiv kukurudzy dlia vyrobnytstva bioetanolu v umovakh Lisostepu pravoberezhnoho* [Scientific and theoretical substantiation of the cultivation technology and adaptability of corn hybrids for the production of bioethanol in the conditions of the right-bank forest-steppe] (Cand. Agric. Sci. Diss.) Podilskyi derzh. ahro.-tekh. un-t. Kamianets-Podilskyi. Ukraina. [in Ukrainian]
12. Lysytsyn, D. I. (1950). A semi-micro method for the determination of sugars in plants. *Byokhymyia* [Biochemistry], *15 (2).* 165–167. [in Russian]
13. Bielikov, Ye. I., Klimova, O. Ye. (2005). Collection of the gene pool of edible corn and its use in breeding. *Henetychni resursy roslyn* [Genetic resources of plants], *2.* 55–62. [in Ukrainian]
14. *Metodyka provedennia ekspertyzy sortiv roslyn kartopli ta hrup ovochevykh, bashtannykh, priano-smakovykh na prydatnist do poshyrennia v Ukraini* (2016). [Methodology for examination of varieties of potato plants and groups of vegetable, melon, spicy-flavored plants for suitability for distribution in Ukraine]. *Mi-nisterstvo ahrarnoi polityky ta prodovolstva Ukrainy, Ukrainskyi Instytut ekspertyzy sortiv roslyn.* Vinnytsia: Tvory. 94 p. [in Ukrainian]

УДК 633.152:631.527

Гайдаш О. Л. , Дзюбецький Б. В. , Черчель В. Ю. , Мусатова Л. О. ***Оцінка вихідного матеріалу кукурудзи цукрової за основними селекційними показниками.*** *Зернові культури. 2022. 6 (2). 37–42.*
Державна установа Інститут зернових культур НААН, вул. Володимира Вернадського, 14, м. Дніпро, 49009, Україна

Актуальність. Зерно цукрової кукурудзи відрізняється від інших підвидів високим вмістом цукрів: в 2 рази більше від зубовидної накопичує моно та дисахаридів, в 20 разів більше декстринів і майже в 2 рази менше крохмалю при вмісті в зерні сирого білка (протеїну) 10,4–14,9 %. Основним напрямком селекції цукрової кукурудзи є отримання міжлінійних гібридів, які мають високу врожайність, придатні до механізованого збирання качанів, стійкі до основних хвороб та шкідників, а також характеризуватися високими технологічними якостями зерна. Ефективне рішення цих задач в значній мірі залежить від знання морфологічних і біологічних особливостей та правильно підібраного вихідного матеріалу (самозапилених ліній) **Мета**. вивчення морфологічних і біологічних особливостей ліній кукурудзи цукрової. **Матеріали і методи**. Візуальний – фенологічні спостереження; лабораторно-польовий – визначення морфо-біологічних ознак рослин; вимірювально-ваговий – визначення врожайності та метричних ознак рослин; математично-статистичні – визначення достовірності результатів, показників варіабельності ознак, кореляційної залежності ознак; дисперсійний аналіз; комплексне оцінювання морфо-біологічних та господарсько-цінних характеристик інбредних ліній. **Результати.** Проведений аналіз складу цукрів у досліджуваних зразків виявив високий вміст моноцукрів (глюкоза, фруктоза та ін.) у ліній ГОЛ-1 $_{1411111}$, ГОЛ-1 $_{1411211}$, ДКС346 $_{114}$, DINAR346 $_{141}$, ГОЛ-19 та дицукрів (цукроза, лактоза, мальтоза) у ГОЛ-1 $_{1411211}$, CBAN1212 $_{123}$, ГОЛ-19. Ці показники важливі при глибокій переробці цукрової кукурудзи для харчової промисловісті у вигляді самостійного продукту і в якості одного з компонентів, що входять до складу кулінарних виробів. Їх використовують для виготовлення солодощів, напоїв (солодких і алкогольних), соусів. Низький рівнем вмісту сахарози мали лінії: DINAR346 $_{141}$, ГОЛ-1 $_{1411511}$ – 3,7 та 4,6 % відповідно. **Висновки**. За результатами досліджень селекційного матеріалу кукурудзи цукрової визначено самозапилені сім'ї з високими смаковими якостями (7 балів): ГОЛ-1 $_{1411111}$, ГОЛ-1 $_{1411211}$, ДКС346 $_{114}$, ГОЛ-4 $_{1411141}$ та ГОЛ-19, які в подальшому будуть залучені в програми селекції кукурудзи цукрової зі створення конкурентоспроможних високоврожайних гібридів з високим вмістом цукрів у зерні, підвищеними смаковими і технологічними якостями.

Ключові слова: *цукрова кукурудза, лінія, вміст цукрів, насіннєва продуктивність, смакові якості зерна*