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DOMINANCE AND HETEROSIS IN F₁ WATERMELON HYBRIDS

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Purpose. To evaluate heterosis in new F₁ hybrids and to select the best ones with the greatest dominance and heterosis for the "growing period length", "yield", "marketability" and "mean marketable fruit weight" traits for further use in breeding for heterosis. **Object.** Twenty-seven F₁ watermelon hybrids and 22 parents. **Methods.** General scientific, measuring and weighing, computational and statistical. **Results.** F₁ watermelon hybrids and their parents were screened for the following characteristics: lengths of interphase periods, total yield, marketability, and mean marketable fruit weight. Analysis of the growing period and its parts showed that in the hybrids the "emergence - ripening" period ranged 71 to 80 days in 2021 and 60 to 84 days in 2022. The variation limits were from 6 to 24 days. The "anthesis of male flowers - anthesis of female flowers" and "anthesis of female flowers – fruit setting" were the most stable interphase periods across the years both in the hybrids and in the parents. Eleven hybrids were classed as ultra-early, as their "emergence - ripening" period did not last longer than 63 days in 2022 or 72 days in 2021. On average in the hybrids across the study years, the variation amplitude (*Am*) of the "total yield" trait was 30.9 t/ha; of the "marketability" trait – 16%; of the "mean marketable fruit weight" trait – 2.9 kg. In the parents, *Am* was 43.1 t/ha, 20% and 2.8 kg for the "total yield", "marketability" and "mean marketable fruit weight" traits, respectively. The variation limits (*Lim*) of the "yield" and "marketability" traits in the parents were wider than those in the hybrids. On the opposite, the variation limits of the "% to the check accession" and "mean marketable fruit weight" traits in the study years were wider in the hybrids. In breeding for yield, 10 F₁ hybrids, which were significantly superior to the check F₁ hybrid, 'Kazka', (130-166% to the check hybrid), are of practical value. Analysis of dominance and heterosis in the F₁ hybrids allowed us to select the best combinations with the greatest dominance and heterosis for yield ($hp=0.39-3.94$; $X=101-136$), marketability ($hp=0.11-7.00$; $X=101-106$) and mean marketable fruit weight ($hp=0.26-99.00$; $X=100-164$). Based on high indicators of dominance and heterosis, 10 F₁ hybrids were selected for further breeding; they were also noticeable for a set of economically valuable characteristics: early ripening, high yield, marketability, evenness, resistance to biotic factors, etc. Fruits of the selected hybrids are attractive in appearance and have excellent palatability. The selected F₁ hybrids are valuable for breeding to create competitive first-generation watermelon hybrids. **Conclusions.** The interphase periods that were most stable across the years were determined. Eleven ultra-early hybrids were selected. Ten F₁ hybrids, which in two study years were significantly superior to the check F₁ hybrid, 'Kazka', (130-166% to the check hybrid), are of practical value. High marketability was noted in 6 hybrids. Analysis of dominance and heterosis in the F₁ hybrids allowed us to select 10 combinations with the greatest dominance and heterosis for yield ($hp=0.39-3.94$; $X=101-136$), marketability ($hp=0.11-7.00$; $X=101-106$) and mean marketable fruit weight ($hp=0.26-99.00$; $X=100-164$) for further breeding, as they are of practical value for heterosis breeding

Key words: watermelon, breeding, F₁ hybrid, breeding trait, dominance, heterosis, breeding value.

Introduction. Watermelon (*Citrullus lanatus* (Thumb.) Matsum. Et Nakai) is a valuable food product; it is a source of vitamins and medicinal ingredients, which are important for health. Watermelons are grown for ripe juicy fruits that are rich in sugars. Depending on growing conditions, the sugar content can vary from 4 to 12%. Watermelon is rich in vitamin B9 some essential amino acids and mineral salts (Kravchenko V.O., Prylipko

O.V., 2002). Watermelons contain easily digestible calcium and iron salts and are used as a remedy for various diseases. Fruits are used mainly fresh, but can be processed. Expansion of the assortment of highly adaptable watermelons is very important.

New gourd varieties and hybrids allow for a 15-20% increase in yields without significant additional costs. Hybrids are obtained via hybridization of two specially created and well-selected initial

parent forms. F₁ hybrid plants are more homogeneous and uniform in their biological and morphological characteristics than conventional varieties. However, one should take into account that as the yield capacities varieties and hybrids grow, their demand for cultivation technologies increases considerably and the yield amount and quality becomes more dependent both on biotic and abiotic factors.

The global approach to fulfillment of the biological potential of watermelons consists in the use of various genetic methods to change the heredity of plants, among which heterosis breeding holds a special place. In the context of agriculture intensification, new requirements are put forward to new genotypes; the main of them are high uniformity of traits and features, stability of their expression, high yield, and top quality of products. These objectives can be solved by using heterosis, a genetic phenomenon, which has been widely used in vegetable and gourd breeding over the past fifty years.

Analyzing successes in the breeding of commercial hybrids, we should note that they depend on the availability of a wide assortment of specific lines, which allows for a quicker response to changes of the current market. In addition, with heterozygous hybrids, it is easier to protect copyright and conduct effective controlled seed production.

Review of Recent Studies and Publications.

As of today, there are 127 watermelon varieties and hybrids in the Register of Plant Varieties Suitable for Dissemination in Ukraine. Most of them are varieties and only 22.8% of the watermelons in the Register are hybrids (4.7% of them were bred in Ukraine). For today's conditions, the Register comprises too few hybrids, as due to heterosis, it is possible to increase yields by 15-30% (State Register of Plant Varieties Suitable for Dissemination in Ukraine in 2022).

Today, hybrid breeding is much more promising than variety breeding, which is almost at the end of its resources, having reached the biological limit of performance. In hybrids, it is no problem to combine important features such as yield, resistance, fruit quality, adaptability, etc. significantly increasing the efficiency of heterosis breeding. Varieties of any crop have a common genetic basis and are highly related, and it is genetically regulated heterosis that can give new opportunities for increasing the efficiency of breeding and for providing the population with high-quality vegetable and gourd products in scientifically justified quantities. Most breeders came to the conclusion that stable

heterosis in watermelons could be only achieved in interline hybrids from homogeneous lines. Heterosis is manifested when environmentally and geographically distant forms are crossed, especially if the female line is a local form, and the male form is distant in origin (*Kravchenko V., Prylypko O., 2002*).

As above mentioned, new high-yielding varieties and hybrids with high fruit quality and resistance to biotic and abiotic factors are an important factor in achieving high yields (*Umber-tayev I., Makhmadzhanov S. (Eds.), 2015; Zhou, X.G., Everts, K.L., 2004; Serhiienko O.V., 2017*). Cultivation of varieties and hybrids with complex resistance are ecologically safe, meaning no pollution of the environment or residual amounts of pesticides in products. Identification of new sources of valuable traits, including those with a strong heterosis effect, is a very important area in gourd studies, as it can solve the problem of competitive hybrids with desirable parameters.

50% of the foreign market is represented by watermelon hybrids. The Dutch company Nunhems Zaden is the world's leader in creating heterotic watermelon hybrids; every year it offers new competitive hybrids, for example: 'Crisby', 'Trophy', 'Lady', 'Dumara', 'Red Comet', 'Red Star', etc. Seminis Vegetable Seeds, Inc, which created hybrids 'Crimson Glory', 'Madera', 'Pata Negra', 'Royal Majesty', 'Royal Sweet', 'Red Sweet', etc., was an active player in this field. Russian, Hungarian, Chinese, Japanese, and American breeders are intensively working to create heterotic watermelon hybrids (*Global market of watermelons and melons, 2019*).

The leading countries worldwide refuse to grow varieties and massively introduce heterotic hybrids into agricultural production, which characterizes the current policy. The main advantage of hybrids is not only heterosis in terms of performance (30%), but also their ability to combine traits that are difficult to combine in varieties. (*Orliuk A.P., Didenko V.P., 2009; Sokolov S.D., 2003*). As gourd cultivation becomes more popular in the private sector, the demand for attractively looking, high-yielding, short-season, top-quality, intensive, simultaneously ripening, heterotic hybrids has increased. Consumers need delicious, disease-resistant, early-ripening, cold-resistant, cheap, new hybrids with long shelf lives. Success in the breeding of commercial hybrids depends on the availability of a wide assortment of specific lines, which allows for a quicker response to changes in the current market. It is hybrids that can yield more, com-

binning several economically valuable traits in one genotype and additionally facilitating copyright protection of completed scientific innovations. Hybrid breeding promotes close interactions between seed producers and originators, positively affecting the entire production process of vegetables and fruits and introduction of domestic developments at agrarian enterprises of various forms of ownership.

Hence, the study was focused on evaluating dominance degrees and heterosis effects in new watermelon hybrids (in comparison with their parents) versus the check accessions for further use in breeding for heterosis.

Purpose. To evaluate heterosis in new F₁ hybrids and to select the best ones with the greatest dominance and heterosis for the "growing period length", "yield", "marketability" and "mean marketable fruit weight" traits for further use in breeding for heterosis.

Materials and methods. The experiments were carried out in the experimental breeding crop rotation fields of the Institute of Vegetable and Melon Growing of NAAS located in the Left-Bank Forest-Steppe of Ukraine (central moderately humid area of the Kharkivkyi District of the Kharkivska Oblast) in 2021-2022. The climate of the study site is temperate-continental. The experiments were carried out outdoors on a natural background of infections. Twenty-seven F₁ watermelon hybrids and 22 parents were studied. F₁ hybrid 'Kazka' (Ukraine) and variety 'Max Plus' (Ukraine) were taken as check accessions. The record plot was 19.6 m². The experiments were conducted in two replications. Economically valuable characteristics in the hybrids were evaluated in comparison with those in their parents. Dominance degree and heterosis in the F₁ watermelon hybrids were determined. The study was conducted in accordance with conventional methods (Horova T.K., Yakovenko K.I. (Eds.), 2001; Yakovenko, K. I. (Eds.), 2001; Korniienko S. I., Serhiienko O. V., Krutko R. V., 2016; Lymar A.O. et al., 2001). Data were statistically processed, as BA Dospekhov described (Dospekhov V.A., 1985). Data were mathematically processed in Statistica. Dominance degree and heterosis effect were determined, as it is recommended in the guidebook "Genetics of Quantitative Traits. Genetic Crossings and Genetic Analysis" (Litun P.P., Proskurnin N.V., 1992). The farming techniques were traditional for watermelon growing in this soil/climate zone (Yakovenko, K. I. (Eds.), 2001; DSTU5045:2008, 2008).

Results. The F₁ watermelon hybrids and their parents were screened for the following characteristics: lengths of interphase periods, total yield, marketability, and mean marketable fruit weight.

Analysis of the growing period and its parts showed that the "emergence - ripening" period in the hybrid ranged 71 to 80 days in 2021 and 60 to 84 days in 2022. In the parent, this period was 75-82 days (2021) and 67-84 days (2022). The variation amplitude of the growing period parts was 6 - 24 days. On average across the study years, the variation limits (*Lim*) were 66-82 days in the hybrids and 71-83 days in the parent; the variation amplitude (*A_m*) of the "emergence - ripening" period was 16 days in the hybrids and 12 days in the parents (Table 1).

All hybrids and parents were classed as early-ripening by growing period and its parts. The maximum variation range was recorded for the "emergence - stem formation" and "emergence - ripening" interphase periods. The "anthesis of male flowers – anthesis of female flowers" and "anthesis of female flowers – fruit setting" were the most stable interphase periods across the years both in the hybrids and in the parents.

The following F₁ hybrids were categorized as ultra-early: F₁ 'Limono 2/Mak', F₁ 'Leshchyna/Mak', F₁ 'Mak'/'Lypa', F₁ 'Limono 2'/'Persnyi', F₁ 'Shar'/'Leshchyna', F₁ 'Mak'/'No. 543', F₁ 'No. 543'/'Mak', F₁ 'Persnyi'/'Chorna', F₁ 'Chorna'/'Persnyi', F₁ 'Ohoniok'/'Chorna', and F₁ 'Br-19'/'Shar'. The "emergence - ripening" period in these hybrids was not longer than 63 days in 2022 or 72 days in 2021.

The variation amplitude (*A_m*) of the total yield in the F₁ hybrids was 28.6 t/ha and 47.2 t/ha in 2021 and 2022, respectively; the variation limits (*Lim*) were 15.4-43.0 t/ha and 32.0-79.2 t/ha, respectively (Table 2).

On average in the hybrids across the study years, the variation amplitude (*A_m*) of the "total yield" trait was 30.9 t/ha; of the "marketability" trait – 16%; of the "mean marketable fruit weight" trait – 2.9 kg. In the parents, *A_m* was 43.1 t/ha, 20% and 2.8 kg for the 'total yield', 'marketability' and 'mean marketable fruit weight' traits, respectively. The variation ranges (*Lim*) of the "yield" and "marketability" traits in the parents were wider than those in the hybrids. On the opposite, the variation ranges of the "% to the check accession" and "mean marketable fruit weight" traits were wider in the hybrids.

Table 1. Variation ranges and limits of the growing period parts in the F₁ hybrids and parent, days (2021-2022)

Variation range and amplitude of the interphase period	Interphase period								
	Emergence – stem formation	Emergence – anthesis of female flowers	Emergence – fruit setting	Shooting – anthesis of female flowers	Shooting – fruit setting	Anthesis of male flowers – anthesis of female flowers	Anthesis of female flowers – fruit setting	Emergence – ripening	
F ₁ hybrids									
2021	<i>Lim</i>	22 - 30	37-43	38-47	7-17	11-19	1 - 7	1-10	71-80
	<i>Am</i>	8	6	9	10	8	6	9	9
2022	<i>Lim</i>	20 - 34	32-43	35-47	6-21	11-22	1 - 8	1-9	60-84
	<i>Am</i>	14	11	12	15	11	7	8	24
Mean (\bar{X})	<i>Lim</i>	21-32	35-43	37-47	7-19	11-21	1-8	1-9	66-82
	<i>Am</i>	11	8	10	12	10	7	8	16
Parents									
2021	<i>Lim</i>	21-44	38-42	38-47	5-19	3-21	1-7	1-10	75-82
	<i>Am</i>	23	14	9	14	18	6	9	7
2022	<i>Lim</i>	14 - 30	26-41	34-46	6-17	10-22	2 - 8	2-9	67-84
	<i>Am</i>	16	15	12	11	12	6	7	17
Mean (\bar{X})	<i>Lim</i>	18-37	32-	36-47	6-18	7-22	2-8	2-10	71-83
	<i>Am</i>	19	10	11	12	15	6	8	12

The following F₁ hybrids, which in two years of research significantly (130-166% to the check accession) outperformed the F₁ check hybrid, 'Kazka', are valuable in breeding for yield: F₁ 'Br-19'/'Rada', F₁ 'Harna'/'K 605', F₁ 'Lypa'/'Harna', F₁ 'Limono 2'/'Mak', F₁ 'Leshchyna'/'Mak', F₁ 'Mak'/'Lypa', F₁ 'Mak'/'No. 543', F₁ 'Lypa'/'Mak', F₁ 'Harna'/'Mak', and F₁ 'No. 543'/'Mak'. High marketability was noted in F₁ 'Lypa'/'Mak', F₁ 'No. 543'/'Mak', F₁ 'Shar'/'Br-19', F₁ 'Lypa'/'Harna', F₁ 'K 605'/'Harna', and F₁ 'Limono 2'/'Persnyi'.

In 2021-2022, the dominance degree and heterosis were determined (Table 3).

The variation amplitude (*Am*) of the dominance degree (*hp*) for the "yield" trait was 4.56, with *Lim* of -0.62-3.94 in 2021; in 2022, *Am* was 16.93 and *Lim* was - 15.54-1.39. The variation am-

plitude (*Am*) for the heterosis effect (*X*) for the "yield" trait was 37, with the variation range of 99-136 in 2021; in 2022, the corresponding indicators were 93 and 49-170.

Having determined the dominance degree and heterosis effect in the F₁ hybrids, we selected combinations with the highest degree of dominance and strongest effect of heterosis for the "yield", "marketability" and "mean marketable fruit weight" traits. Ten best F₁ hybrids were selected for further breeding due to their high degree of dominance and strong effect of heterosis.

The selected F₁ hybrids were also noticeable for a set of economically valuable characteristics (high yield, marketability, uniformity, resistance to biotic factors, etc) in comparison with the check hybrid (Table 4).

Table 2. Variation ranges and limits of yield constituents in the F₁ hybrids and parent, 2021-2022

Variation range and amplitude of yield constituents	Yield constituents				
	Total yield		Marketability, %	Mean marketable fruit weight, kg	
	t/ha	% to the check accession			
F ₁ hybrids					
2021	<i>LSD</i> ₀₅	2.19			
	<i>Lim</i>	15.4-43.0	59-166	57-65	1.8-3.7
	<i>A_m</i>	28.6	106	8	1.9
2022	<i>LSD</i> ₀₅	3.5			
	<i>Lim</i>	32.0-79.2	74-181	75-99	0.9-4.9
	<i>A_m</i>	47.2	107	24	4.0
Mean (\bar{X})	<i>Lim</i>	23.7-54.6	67-173	66-82	1.4-4.3
	<i>A_m</i>	30.9	106	16	2.9
Parents					
2021	<i>LSD</i> ₀₅	2.7			
	<i>Lim</i>	15.4-40.1	59-155	57-65	1.9-3.1
	<i>A_m</i>	24.7	96	8	1.2
2022	<i>LSD</i> ₀₅	7.7			
	<i>Lim</i>	18.5-60.1	38-125	60-92	1.4-5.9
	<i>A_m</i>	51.6	87	32	4.5
Mean (\bar{X})	<i>Lim</i>	17.0-50.1	49-140	59-79	1.7-4.5
	<i>A_m</i>	43.1	91	20	2.8

Table 3. Dominance degree (hp) and heterosis effect (X) in the best F₁ watermelon hybrid, mean for 2021-2022

Hybrid	Dominance degree and heterosis						
	Yield		Marketability		Mean marketable fruit weight		
	<i>hp</i>	<i>X</i>	<i>hp</i>	<i>X</i>	<i>hp</i>	<i>X</i>	
F ₁ 'Lypa'/'Mak'	2.82	128	7.00	106	2.60	125	
F ₁ 'Leshchyna'/'Mak'	2.06	101	0.50	102	99.00	122	
F ₁ 'Limono 2'/'Persnyi'	1.70	115	1.00	104	3.67	126	
F ₁ 'Shar'/'Leshchyna'	1.24	121	1.00	105	3.67	126	
F ₁ 'No. 543'/'Mak'	2.25	136	1.00	102	0.26	100	
F ₁ 'Limono 2'/'Mak'	0.39	105	0.40	101	1.40	112	
F ₁ 'Skarbnytsia'/'Such'	3.94	136	5.00	118	4.00	106	
F ₁ 'Mak'/'No. 543'	0.61	118	0.11	101	1.9	133	
F ₁ 'Lypa'/'Harna'	0.98	124	1.00	102	19.00	106	
F ₁ 'Br-19'/'Rada'	1.39	170	0.60	105	5.80	164	
<i>In the entire sample (27 accessions):</i>							
2021	<i>Lim</i>	-0.62-3.94	99-136	-3.00-7.00	98-118	-0.67-5.80	91-133
	<i>A_m</i>	4.56	37	10	20	6.47	42
2022	<i>Lim</i>	-15.54-1.39	49-170	-19.0-1.33	79-118	-0.6-89.0	72-133
	<i>A_m</i>	16.93	93	20.33	39	89.6	61

Table 4. Characterization of the best F₁ watermelon hybrids in terms of economically valuable characteristics, mean for 2021-2022

Hybrid	Economic characteristics				
	"Emergence – ripening" period, days	Yield		Marketability, %	Mean marketable fruit weight, kg
		Total yield, t/ha	% to the check accession		
F ₁ 'Kazka' (check hybrid)	79	31.5	100	87	3.0
F ₁ 'Lypa'/'Max Plus'	73	43.0	137	82	3.1
F ₁ 'Leshchyna'/'Maks Plus'	71	54.6	173	93	2.9
F ₁ 'Limono 2'/'Persnyi'	74	40.7	129	84	2.7
F ₁ 'Shar'/'Leshchyna'	76	37.5	119	96	2.4
F ₁ 'No. 543'/'Maks Plus'	76	41.3	131	90	2.3
F ₁ 'Limono 2'/'Maks Plus'	73	41.1	130	81	2.6
F ₁ 'Skarbnytsia'/'Sich'	75	33.8	107	84	2.4
F ₁ 'Maks Plus'/'No. 543'	73	41.6	132	89	2.6
F ₁ 'Lypa'/'Harna'	78	50.6	161	81	3.0
F ₁ Bryz'/'Radost'	75	39.2	124	82	3.0
<i>Mean (\bar{X}) for the entire sample (27 accessions):</i>					
<i>Lim</i>	66-82	23.7-54.6	67-173	66-82	1.4-4.3
<i>A_m</i>	16	30.9	106	16	2.9

Fruits of the selected F₁ hybrids were attractive in appearance, had excellent palatability, ripened early and are valuable in breeding to create competitive F₁ watermelon hybrids.

Conclusions. The F₁ watermelon hybrids and their parents were screened for lengths of interphase periods, yield, marketability and mean marketable fruit weight. The "anthesis of male flowers - anthesis of female flowers" "anthesis of female flowers - fruit setting" interphase periods were found to be most stable across the years both in the F₁ hybrids and in the parents. Eleven ultra-early hybrids were identified; their "emergence - ripening" periods were not longer than 63 days in 2022 or 72 days in 2021. In breeding for yield, 10 F₁ hybrids are of the practical value, because in two years of research they were significantly superior (130-166% to the check hybrid) to 'Kazka' (F₁ check hybrid). High marketability was noted in 6 hybrids. Having determined the dominance degree and heterosis effect in the F₁ hybrids, we selected combinations with the highest degree of dominance and strongest effect of heterosis for the "yield" (hp = 0.39-3.94; X = 101-136), "marketability" (hp = 0.11-7.00; X = 101-106) and "mean marketable fruit weight" (hp = 0.26-99.00; X = 100-164) traits. Based on high degrees of dominance and strong effect of heterosis, the following 10 F₁ hybrids were selected for further heterosis

breeding; they were also noticeable for a set of economically valuable characteristics (early ripening, high yield, good marketability): F₁ 'Lypa'/'Mak', F₁ 'Leshchyna'/'Mak', F₁ 'Limono 2'/'Persnyi', F₁ 'Shar'/'Leshchyna', F₁ 'No. 543'/'Mak', F₁ 'Limono 2'/'Mak', F₁ 'Skarbnytsia'/'Sich', F₁ 'Mak'/'No. 543', F₁ 'Lypa'/'Harna', and F₁ 'Br-19'/'Rada'.

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СТУПІНЬ ДОМІНАНТНОСТІ ТА ЕФЕКТ ГЕТЕРОЗИСУ ГІБРИДНИХ КОМБІНАЦІЙ F₁ КАВУНА

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Мета. Визначити рівень прояву гетерозису в нових гібридних комбінаціях F₁ та виділити кращі з найвищими показниками ступеня домінантності та ефекту гетерозису за ознаками «тривалість вегетаційного періоду», «урожайність», «товарність» та «середня маса товарного плоду» для подальшого використання у селекції на гетерозис. **Об’єкт.** 27 гібридних комбінацій F₁ кавуна та 22 батьківські форми. **Методи.** Загальнонаукові, вимірювально-вагові, розрахункові, статистичні. **Результати.** Проведено скринінг гібридних комбінацій F₁ та батьківських форм кавуна за ознаками: «тривалість міжфазових періодів», «загальна урожайність», «товарність» та «середня маса товарного плоду». Аналіз тривалості вегетаційного періоду та його складових показав, що розмах варіювання періоду «сходи – досягання» у гібридних комбінаціях у 2021 році складав 71-80 діб, у 2022 році – 60-84 доби. Ліміт варіювання рівня показників складав від 6 до 24 діб. Найбільш стабільна за роками досліджень тривалість міжфазових періодів «цвітіння чоловічих квіток – цвітіння жіночих квіток» та «цвітіння жіночих квіток – зав’язування плодів», як у гібридних комбінацій, так й батьківських форм. До надраних гібридних комбінацій було віднесено 11 форм, у яких період «сходи – досягання» гібридних комбінацій не перевищував 63 доби у 2022 р. та 72 доби у 2021 р. У середньому за роки досліджень амплітуда варіювання (A_m) гібридних комбінацій ознаки «загальна урожайність» дорівнювала 30,9; товарності – 16; ознаки «середня маса товарного плоду» - 2,9. У батьківських форм (A_m) ознаки «загальна урожайність» дорівнювала 43,1; товарності – 20; ознаки «середня маса товарного плоду» - 2,8. Розмах варіювання (Lim) батьківських форм був більшим за гібридних комбінацій для ознак «урожайність» і «товарність», розмах варіювання ознак «відсоток до стандарту» та «середня маса товарного плоду» за роки досліджень був більше навпаки у гібридних комбінацій. Для селекційної роботи на ознаку «урожайність» практичну цінність становлять 10 гібридних комбінацій F₁, які за два роки досліджень істотно (130 – 166 % відносно стандарту) перевищували стандарт Казка F₁. У результаті визначення ступеня домінантності й ефекту гетерозису гібридних комбінацій F₁ виділено кращі гібридні комбінації з найвищими показниками ступеня домінантності та ефекту гетерозису за ознаками «урожайність» (hp=0,39-3,94; X=101-136), «товарність» (hp=0,11-7,0; X=101-106) та «середня маса товарного плоду» (hp=0,26-99,00; X=100-164). За високими показниками ступеня домінантності та ефекту гетерозису для подальшої селекційної роботи виділено 10 гібридних комбінацій F₁, які відрізняються також за комплексом господарсько-цінних показників – ранньостиглістю, високою врожайністю, товарністю, вирівняністю, стійкістю до біотичних чинників та ін. Плоди, виділених гібридних комбінацій, мають привабливий зовнішній вигляд та високі смакові якості. Виділені гібридні комбінації F₁ мають цінність для селекційної роботи зі створення конкурентоздатних гібридів кавуна першого покоління. **Висновки.** Визначено найбільш стабільні за роками складові вегетаційного періоду. Виділено 11 надраних гібридних комбінацій. Практичну цінність становлять 10 гібридних комбінацій F₁, які за два роки досліджень істотно (130 – 166 % відносно стандарту) перевищили стандарт Казка F₁. Високу товарність було відмічено у 6 гібридних комбінацій. У результаті визначення ступеня домінантності й ефекту гетерозису гібридних комбінацій F₁ виділено 10 гібридних комбінацій F₁ з найвищими показниками ступеня домінантності та ефекту гетерозису за ознаками «урожайність» (hp=0,39-3,94; X=101-136), «товарність» (hp=0,11-7,00; X=101-106) та «середня маса товарного плоду» (hp=0,26-99,00; X=100-164) для подальшої селекційної роботи, які становлять практичну цінність для гетерозисної селекції.

Ключові слова: кавун, селекція, гібридна комбінація F₁, селекційна ознака, ступень домінантності, ефект гетерозису, селекційна цінність.