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The productivity of white cabbage using organic technology in the right-bank Forest-Steppe zone of Ukraine

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Abstract. White cabbage (*Brassica capitata alba* L.) is one of the basic and most widely grown vegetable crops in Ukraine and worldwide. The growing demand for organic products increases the relevance of research aimed at selecting cabbage varieties and hybrids capable of ensuring high yields using organic cultivation technologies. The aim of the study was to investigate the characteristics of growth, development and yield formation of white cabbage varieties and hybrids under organic cultivation in open ground. Research on mid-season varieties and hybrids of white cabbage under organic cultivation in open ground was conducted by setting up field experiments in 2019-2023. Field and statistical research methods were used in the experimental work. The study was conducted with mid-season varieties such as 'Slava 1305', 'Slavia' and white cabbage hybrids: 'Akvarel F_1', 'Megaton F_1', and 'Kubok F_1'. The results of the research showed that the biometric parameters of plants and products and the yield of white cabbage were significantly influenced by the biological characteristics of varieties and hybrids. The research showed that varietal characteristics influenced plant height, rosette diameter, number of leaves and leaf area. The largest leaf area of white cabbage plants in all phases of growth and development, including the phase of technical maturity, was observed in the hybrid 'Akvarel F_1' – 33.9 thousand m^2/ha. The highest yield during the years of research was observed in the hybrids 'Akvarel F1' and "Kubok F1", which provided an increase of 9.9 and 7.3 t/ha relative to the control. These hybrids formed the largest head weight – 1,273 g and 1,220 g, respectively. The practical value of the study lies in the fact that its results make it possible to identify the most productive varieties and hybrids of white cabbage for organic cultivation in open ground, which will contribute to increasing its yield and quality

Keywords: variety; hybrid; biometric indicators; organic cultivation; yield

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Introduction

Traditional white cabbage cultivation technology involves the use of high doses of mineral fertilisers and pesticides, which leads to the accumulation of nitrates in the product. This makes it necessary to switch to organic technologies, which reduce the anthropogenic load on agroecosystems and increase the environmental safety of vegetable products. In this context, it is important to scientifically substantiate the effectiveness of growing different varieties and hybrids of white cabbage using organic technology in the conditions of the Right-Bank Forest-steppe of Ukraine. The results obtained will contribute to the improvement of organic vegetable production and the expansion of the range of organic products on the market.

The study of the assortment of white cabbage is carried out in various regions of the Forest-steppe of Ukraine. According to research by I.V. Gutman *et al*. (2025), white cabbage of some of the studied hybrids showed high yield indicators. According to the results of the research, the highest yield of late-maturing white cabbage was obtained when growing the hybrids 'Jintama F_1' and 'Aggressor F_1', which amounted to 135.37-155.79 t/ha in 2023 and 138.66-158. 4 t/ha in 2024. Considering the yield, this allows to recommend them for cultivation in the Forest-steppe zone of Ukraine. A wide range of agrotechnical measures aimed at increasing the productivity of white cabbage varieties and hybrids are used in global practice. One of the key factors for successful cultivation is sufficient soil moisture, as this crop is characterised by a high demand for water, which ensures the formation of a large leaf rosette and full head formation. Research conducted by O. Erken & M. Yildirim (2019) showed that reduced irrigation increases the content of ascorbic, lactic, tartaric and malic acids; on the other hand, reduced sugar content and total sugar content increased with full irrigation. The application of different amounts of irrigation water in the study caused changes in the growth and quality of white cabbage (*Brassica oleracea* L. *cv. Capitata*). Under conditions where water stress in cabbage production exceeded 30%, a significant decrease in yield and marketability of the product was observed. The results of the study showed that different levels of soil moisture at the depth of the root system affected not only the yield but also the content of organic acids and sugars. It was possible to maintain a stable yield level when irrigation water was supplied in a volume of at least 411.2 mm. At the same time, an increased content of organic acids was observed in cabbage grown under low soil moisture conditions.

Research by S.A. Vdovenko & I.I. Palamarchuk (2020) found that changes in weather conditions in Ukraine caused an increase in average air temperature, which in turn led to rainless periods, particularly during the growing season for vegetable crops. Thus, according to the analysis of climatic conditions in Ukraine and the yield of vegetable crops, it was found that during the period 2006-2020, the climate changed towards warming in the summer months and significant cooling in the winter, which caused a decrease in yield, negatively affecting the country's food security. Research by D. Kavaliauskaitė *et al*. (2023), conducted at the Institute of Horticulture of the Lithuanian Research Centre for Agriculture and Forestry, showed that the highest marketable yield of white cabbage reached 80.5 t/ha, and the vitamin C content was 7.80 mg per 100 g of product when granulated bird manure fertiliser was applied in autumn and mineral fertiliser in spring. After using bird manure fertiliser, the nitrate content in white cabbage heads was found to be minimal, indicating high product quality when using organic cultivation technology.

In a study by E. Kunicki *et al*. (2024), conducted in open field conditions, the effect of four biostimulants (Asahi, Optysil, Optycal and Tytanit) on the yield and chemical composition of white cabbage varieties ('Caraflex' and 'Alfredo') was studied. It was found that biostimulants did not have a significant effect on marketable yield, but all of them contributed to a significant increase in ascorbic acid content. The effect on

dry matter, sugars, phenols and antioxidant activity depended on the variety, but in general did not worsen the results compared to the control. Similar positive effects on product quality from the use of organic fertilisers were confirmed by a study by A. Turatbekova *et al*. (2024), which found that organic fertilisers had a positive effect on the quality indicators of white cabbage, including an increase in the level of essential nutrients, in particular vitamin C, total phenol content and antioxidant activity. Such improvements in quality not only increase the nutritional value of the crop, but also provide additional health benefits for consumers.

At the same time, research by V.M. Chernetskyi & I.I. Palamarchuk (2017) on the impact of water supply on the yield of white cabbage varieties was conducted in 2011-2013. It was found that in years with insufficient water supply, cabbage yield decreased by 18.3 t/ha compared to years with sufficient moisture. In addition, in dry years, a decrease in the marketability of the crop was also noted, as evidenced by the lower weight of the heads and increased nitrate content. According to the results of studies by E.M. Kolinko & I.M. Sidorova (2023), it was found that the yield of white cabbage depended on the genotype and ranged from 128.3 t/ha ('Kepler F_1') to 71.3 t/ha ('Kilastor F_1'). Given these results, the aim of the study was to establish the patterns of growth and development of white cabbage varieties and hybrids using organic cultivation technology in open ground and to identify the factors that influence their productivity.

Materials and Methods

The study, dedicated to the investigation of mid-season varieties and hybrids of white cabbage in organic cultivation in open ground, was conducted by setting up field experiments in the period 2019-2023. In accordance with the guidelines of the research methodology by A.O. Rozhkov *et al*. (2016), an experimental design was developed and measures were taken to conduct biometric measurements of white cabbage plants at the appropriate stages and to record the yield. The study was conducted with mid-season varieties: 'Slava-1305', 'Slavia' and white cabbage hybrids: 'Akvarel F_1', 'Megaton F_1', and 'Kubok F_1', as they combine potentially high yields, the formation of consistently high-quality commercial products and resistance to the most common diseases without the use of chemical protection agents. The 'Slava 1305' variety was selected as the control. The experiment was repeated four times, with an area of 20 m^2.

The soil type was grey forest medium loam. Vegetable peas were used as a precursor. White cabbage was grown in open ground using organic technology. The cultivation technology was generally accepted for the area, but only biological products were used for protection, in particular Lepidocide (35-70 ml/2-4 l of water against each generation of pests) and Phytocide-R (5-10 ml/10 l of water as a preventive measure). Agrotechnical measures were carried out in accordance with the requirements of the crop and the research objectives. Plant care included systematic loosening of the soil and removal of weeds. On each plot, 10 experimental plants were marked, on which phenological observations were carried out, biometric measurements were taken, etc. The beginning of each phenological phase was considered to be the time when 15% of plants entered it, and the time of the mass phase was when it occurred in 75% of plants.

Biometric measurements in the corresponding phases of plant growth and development, as well as yield accounting, were carried out on each plot. Field and statistical research methods were used in the experimental work. Phenological observations involved recording the beginning and mass phase of plants by eye. Biometric measurements were carried out to assess plant growth processes and determine morphological characteristics during the growing season. They involved determining the leaf area in dynamics, which allows assessing the intensity of photosynthetic activity and the potential for biomass accumulation, rosette diameter, plant height (using a

measuring ruler), stem thickness (with a vernier caliper) and number of leaves (by counting). The dynamics of leaf area growth were measured at the corresponding stages of growth and development of white cabbage plants, namely: at the head setting stage, the beginning of technical maturity and at the stage of technical maturity. Yield was calculated at technical maturity of heads from each plot separately by weighing. Marketable products were selected in accordance with the requirements of the current standard DSTU 7037-2009 (2010). The results obtained in the experiments were statistically processed using correlation and dispersion analyses. The experimental studies complied with institutional, national and international guidelines. The authors adhered to the standards of the Convention on Biological Diversity (1992) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (1979).

Results

The results of the research showed that the biometric parameters of white cabbage plants were influenced by the biological characteristics of varieties and hybrids (Table 1). The highest plant height was observed in the 'Slavia' variety – 49.6 cm, which is 12.5 cm higher than the control variant and 2.0-6.1 cm higher than in other variants of the experiment. The stem thickness of the studied white cabbage variants was 1.9-2.3 cm and depended on varietal characteristics. The highest value was found in the 'Kubok F_1' hybrid – 2.2 cm, which is 0.3 cm more than the 'Slava 1305' variety (control). The significance of this difference was confirmed by the results of the analysis of variance.

Table 1. *Biometric indicators of white cabbage plants at the stage of technical maturity depending on variety under direct sowing, 2019-2023*

Variety / Hybrid	Plant height, cm	Stem thickness, cm	Rosette diameter, cm	Number of leaves, pcs per plant	Leaf area, thousand m²/ha
'Slava 1305' (control)	37.1	1.9	38.7	18.5	28.6
'Slavia'	49.6	2.0	39.6	19.4	29.7
'Megaton F_1'	43.5	2.0	40.9	22.6	31.6
'Akvarel F_1'	47.6	2.1	41.9	23.4	33.9
'Kubok F_1'	45.1	2.2	41.6	23.1	32.7
$LSD_{0.5}$	1.07	0.18	0.73	1.6	0.51

Source: developed by the authors

The experiment showed that the diameter of the rosette in the studied hybrids was larger and ranged from 40.9 to 41.9 cm, while in the varieties this indicator ranged from 38.7 to 39.6 cm. Among all the variants of the experiment, the plants of the 'Akvarel F_1' hybrid had the largest rosette diameter – 41.9 cm, which is 3.2 cm more than the control. The most leafy hybrids were 'Megaton F_1', 'Akvarel F_1', and 'Kubok F_1', with 22.6, 23.4 and 23.1 leaves per plant, respectively. Accordingly, the highest indicator was observed in the hybrid 'Akvarel F_1' – 23.4 leaves per plant, which is 4.9 leaves per plant more than the control. The largest leaf area in the experiment was observed in hybrids. The increase in this indicator in hybrids relative to the control was 3.0-5.3 thousand m²/ha, respectively. Studies conducted to investigate the dynamics of the increase in the leaf area of white cabbage plants showed that the increase in this indicator occurred with varying intensity and depended on the variety studied and the phase of growth and development of white cabbage plants (Table 2). During the head-setting phase, the largest leaf area was observed in the 'Akvarel F_1' hybrid – 0.90 m²/plant and 25.4 thousand m²/ha, which is 0.21 m² per plant and 6.0 thousand m²/ha more than the control variant, respectively. A larger leaf area relative to the control was recorded in all studied variants. The trend towards an increase in leaf area relative to the control in all

variants continued in the subsequent phases of growth and development of white cabbage. At the beginning of technical maturity, the increase in leaf area in the studied variants was 1.7-8.5 thousand m²ha, and in the phase of technical maturity it was at the level of 1.1-5.3 thousand m²/ha. The data in Table 2 show that the hybrids were characterised by higher assimilation surface growth activity, which had a positive effect on the productivity of white cabbage plants. A direct relationship between yield and leaf area at the technical maturity phase (r = 0.98 ± 0.04) was proven.

Table 2. *Dynamics of the increase in the leaf surface area of white cabbage plants depending on the variety in seedling-free cultivation, 2019-2023*

Variety / Hybrid	Head setting		Onset of technical maturity		Technical maturity	
	m² per plant	thousand m²/ha	m² per plant	thousand m²/ha	m² per plant	thousand m²/ha
'Slava 1305' (control)	0.69	19.4	0.84	23.7	0.98	28.6
'Slavia'	0.77	21.7	0.90	25.4	1.02	29.7
'Megaton F_1'	0.86	24.2	1.08	30.5	1.09	31.6
'Akvarel F_1'	0.90	25.4	1.14	32.2	1.17	33.9
'Kubok F_1'	0.88	24.8	1.08	30.5	1.12	32.7

Source: developed by the authors

The marketable yield of white cabbage depended on weather conditions and the variety studied. The dry period of vegetation directly affected the formation of heads under natural water supply conditions in organic farming. The yield in the experiment was 28.6-38.5 t/ha (Table 3). The highest yields were recorded for the hybrids 'Akvarel F_1' and 'Kubok F_1', where the increase relative to the control was 9.9 and 7.3 t/ha. The smallest yield increase was recorded for the 'Slavia' variety – 1.4 t/ha, and the lowest yield was recorded for the 'Slava 1305' variety (control) – 28.6 t/ha. All the variants studied had a significantly higher yield relative to the control, which was confirmed by the results of the analysis of variance.

Table 3. *Marketable yield of white cabbage depending on the variety in seedless cultivation, 2019-2023*

Variety / Hybrid	Yield, t/ha	Increase ± relative to the control	Head weight, g
'Slava 1305' (control)	28.6	–	963
'Slavia'	30.0	+1.4	975
'Megaton F_1'	32.7	+4.1	1,107
'Akvarel F_1'	38.5	+9.9	1,273
'Kubok F_1'	35.9	+7.3	1,220
$LSD_{0.5}$, t/ha	0.83	–	32.01

Source: developed by the authors

The amount of precipitation during the growing season of white cabbage plants in the years of the study was insufficient for high yield indicators. There was also a period of drought accompanied by high temperatures, which were not conducive to the growth, development and formation of the cabbage crop. The average weight of heads in the experiment for the variants was 963-1273 g. The highest indicators of white cabbage head weight were obtained for the hybrids 'Akvarel F_1' and 'Kubok F_1', where the average weight of one head was 1,273 g and 1,220 g, respectively. Compared to the 'Slava 1305' variety (control), these hybrids had significantly higher

head weights – by 310 g and 257 g, respectively. This indicates the high yield potential of the studied hybrids, their ability to adapt to existing growing conditions and to use nutrients and moisture more efficiently. The results obtained indicate the feasibility of using the 'Akvarel F_1' and 'Kubok F_1' hybrids in organic farming with the possibility of obtaining the maximum possible productivity and product quality indicators. The analysis established a strong direct relationship between yield and head weight ($r = 0.99 \pm 0.03$).

Discussion

Scientists from Ukraine and other countries have conducted a series of studies on white cabbage varieties. L.M. Popova *et al*. (2019) noted that white cabbage hybrids are highly productive. The highest marketable yield was provided by the 'Globus F_1' (88.69 t/ha), while for obtaining an early marketable yield, it is advisable to cultivate the hybrid 'CACM 4034 F_1'. It is also important to preserve product quality during harvesting: the best indicators of product storage in the field during the harvesting period were observed in the control variant – the hybrid 'Pandion F_1'. The yield of white cabbage varieties depends not least on growing conditions, in particular the moisture regime. According to research by A. Hud *et al*. (2023), when the soil was waterlogged in the late stages of growth and development, the plants experienced stress, but in the early stages of waterlogging, they recovered. Research by O.A. Sindesi *et al*. (2025) also proved that the yield of white cabbage depends on soil conditions. In particular, Copenhagen cabbage grown on sandy soils enriched with zeolite responded positively to its application, which contributed to the activation of growth processes and an increase in yield. These results also demonstrate that zeolite can be used to improve some indicators of cabbage growth. In terms of maximum plant height, when comparing the two seasons, the second growing season of cabbage showed improved plant growth on soils fertilised with zeolite. X. Mu *et al*. (2023) also found that soil mulching, a technological element, has an impact on the yield of cabbage varieties. A comprehensive analysis of indicators by filling in the main components and functions of affiliation showed that mulching materials had the greatest effect in comprehensive assessments compared to traditional soil cultivation methods.

Scientists D. Juškeviciene *et al*. (2025) proved the positive effect of biostimulants on different varieties of white cabbage. It was found that the use of amino and humic acids affects the productivity of white cabbage. The results showed that biostimulants increase the yield of cabbage heads by 25% and 35% for the studied varieties compared to the control variant. The highest productivity among the studied varieties (72.5-78.6 t/ha) was recorded in the 'Kaminna Holova' variety in the variant using amino acids and a combination of humic and amino acids. A positive effect was also noted when treating plants with a solution of biostimulants, where an increase in vitamin C and crude protein was observed. Organic cultivation of white cabbage involves the use of organic fertilisers. Research by E. Terry-Alfonso *et al*. (2022) on vermicomposting showed that the organic fertilisers used had a positive effect, contributing to an 88% increase in yield. The inability to use chemical plant protection products in organic technologies encourages more careful control of harmful organisms and the use of all possible agrotechnical methods and biological preparations that can affect their numbers. In an experiment conducted by M. Jam & S. Fortunova (2023), damage to white cabbage by cabbage moth caterpillars was insignificant, therefore it did not require treatment with insecticides, which made it possible to obtain high-quality environmentally friendly products. O.V. Matros & O.M. Matros (2025) demonstrated in their work that in order to reduce damage to cabbage by pests, it is necessary to maintain spatial isolation, crop rotation, preserve natural buffer zones, and regularly monitor the entomofauna, taking into account climate change. According to research by A. Turatbekova *et al*. (2024), organic fertilisers have a positive effect on the quality characteristics of white

cabbage, including an increase in the level of essential nutrients such as vitamin C, an increased total phenolic content and increased antioxidant activity. O. Kuts *et al.* (2023) also found that the use of an optimal fertilisation system on white cabbage varieties, namely organic and mineral fertilisers, as well as biological fertilisation systems with a complex of microbial preparations, contributed to an increase in plant height by 22.5-31.3%, leaf rosette diameter by 21.8-32.1%, head diameter by 10.7-13.5% and head weight by 32.9-57.3%.

The results of studies by A. Lončarić *et al.* (2020) showed that the chemical composition of cabbage products primarily depends on the characteristics of the variety. The cabbage varieties studied differed in their physical and chemical composition and morphological characteristics. Six phenolic acids were identified and quantified, with sinapic acid being the dominant component (65.9-78.15 mg/kg). Aldehydes, esters, alcohols and terpenes were the main classes of organic volatile compounds present in the cabbage studied. The 'Chepinsky' cabbage variety, which had never been analysed before, contained the highest amounts of d-limonene (40.75 µg/L) and allyl isothiocyanate (1090.26 µg/L), the most important volatile compounds responsible for the taste of fresh cabbage. The results presented indicate the value of the 'Chepinsky' variety for further production and research.

The work of M. Putnik-Delic *et al.* (2023) found that the application of organic fertilisers plays an important role in the high productivity of white cabbage and kohlrabi. The use of pig and beef manure contributed to the formation of yields at the following levels: white cabbage – 32.63-49.86 t/ha, kohlrabi – 31.83-46.75 t/ha, improved plant nutrition, increased the content of essential nutrients in the soil, and created more optimal conditions for the growth and development of these crops. The application of organic fertilisers in combination with soil mulching proved to be particularly effective, contributing to moisture conservation, activation of soil microorganisms and reduction of nitrate load on products. In the variants with the use of organic fertilisers, more uniform heads with high quality and environmental safety indicators were observed. The results obtained indicate that organic technology for growing cabbage crops makes it possible to obtain higher yields, improves the biometric indicators of products, and contributes to the preservation of natural soil fertility, which is an important factor in the sustainable development of organic vegetable growing. Research by H. Boteva *et al.* (2019), conducted using various types of biological fertilisers, showed an increase in cabbage yield (40.6 t/ha) and an improvement in the biochemical composition of the product: vitamin C content – 32.74 mg/100 g, sugar content – 5.47%, nitrates – 149 mg/kg. Thus, the yield and quality of cabbage were higher compared to the control in the variants with organic and biological fertilisers. No negative effect of organic and biological fertilisers on the shelf life of cabbage was observed. The current study showed that varieties and hybrids of white cabbage grown using organic technology differed in productivity. The most effective were the hybrids 'Akvarel F_1' and 'Kubok F_1', which provided the highest yield of 38.5 and 35.9 t/ha and the highest head weight of 1,273 g and 1,220 g.

Conclusions

A study of the productivity of white cabbage grown organically and under natural moisture conditions helped to establish that varietal characteristics influence the onset of phenological phases of white cabbage plant development, as well as biometric parameters of production and yield. The results showed that the highest plant height was recorded in the 'Slavia' variety (49.6 cm), which is 12.5 cm higher than the control variant. The largest rosette diameter was found in plants of the 'Akvarel F_1' hybrid (41.9 cm), with an increase of 3.2 cm relative to the control variant. The largest number of leaves was formed by plants of the 'Megaton F_1', 'Akvarel F_1' and 'Kubok F_1' hybrids, which had 22.6, 23.4 and 23.1 leaves per plant, respectively. The largest

leaf area index was recorded in hybrids, where the increase compared to the control was 3.0-5.3 thousand m²/ha, respectively. The intensity of leaf area growth in the studied varieties varied. Greater increases in this indicator were observed in white cabbage hybrids. From the heading stage to technical maturity, the trend towards an increase in assimilation area continued. The largest leaf area in the head formation phase was observed in the hybrid 'Akvarel F_1' – 0.90 m² per plant and 25.4 thousand m²/ha, where the increase relative to the control variant was 0.21 m² per plant and 6.0 thousand m²/ha, respectively. All the varieties and hybrids studied outperformed the control in this indicator.

The results of the studies showed that the yield of white cabbage in the conditions of the right-bank Forest-steppe of Ukraine was within the range of 28.6-38.5 t/ha. These indicators show a fairly high level of crop productivity, considering organic cultivation, which confirms the effectiveness of the applied technological methods and their positive impact on yield formation. Thus, the highest yield was obtained from the hybrids 'Akvarel F_1' and 'Kubok F_1', which provided an increase of 9.9 and 7.3 t/ha relative to the control. The largest head weight was found in the 'Akvarel F_1' and 'Kubok F_1' hybrids, which weighed 1,273 g and 1,220 g, which is 310 g and 257 g more than the control, respectively. The study proves that the introduction of organic technologies for growing white cabbage is a promising direction that can preserve the environmental friendliness of products, soil quality and increase yields. Studying the yield of new varieties and hybrids of white cabbage under organic growing systems will help resolve issues related to their adaptability to stressful conditions, increase production efficiency, and provide consumers with high-quality and safe products that meet the requirements of sustainable development in the agricultural sector.

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Conflict of Interest

None.

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Продуктивність капусти білоголової за органічної технології в умовах правобережного лісостепу України

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Анотація. Капуста білоголова (*Brassica capitata alba* L.) є однією з базових і найбільш вирощуваних овочевих культур в Україні та світі. Зростання попиту на органічну продукцію підсилює актуальність досліджень, спрямованих на добір сортів і гібридів капусти, здатних забезпечувати високу врожайність за органічних технологій вирощування. Метою дослідження було вивчити особливості росту, розвитку та формування врожаю сортів та гібридів капусти білоголової за органічного вирощування у відкритому ґрунті. Дослідження середньостиглих сортів та гібридів капусти білоголової за органічного вирощування у відкритому ґрунті проводили закладанням польових дослідів у 2019-2023 роках. При проведенні експериментальної роботи було використано польовий та статистичний методи досліджень. Дослідження проводили з середньостиглими сортами, такими як 'Слава 1305', 'Славія' та гібриди капусти білоголової: 'Акварель F_1', 'Мегатон F_1', 'Кубок F_1'. Результати досліджень показали, що на показники біометричних параметрів рослин та продукції та врожайність капусти білоголової значною мірою вплинули біологічні особливості сортів та гібридів. Проведені дослідження показали, що сортові особливості здійснювали вплив на висоту рослин, діаметр розетки, кількість листків та площу листків. Найбільшу площу листків рослин капусти білоголової в усі фази росту та розвитку у тому числі і у фазу технічної стиглості відмічено у гібриду 'Акварель F_1' – 33,9 тис. м^2/га. Найбільша врожайність у роки досліджень була у гібридів 'Акварель F_1' та 'Кубок F_1', які забезпечили приріст відносно контролю 9,9 та 7,3 т/га. Дані гібриди сформували найбільшу масу головок – 1273 г та 1220 г відповідно. Практична цінність дослідження полягає в тому, що його результати дають змогу визначити найбільш продуктивні сорти та гібриди капусти білоголової для органічного вирощування у відкритому ґрунті, що сприятиме підвищенню її врожайності та якості

Ключові слова: сорт; гібрид; біометричні показники; органічне вирощування; урожайність