UDC «324».003.13:631.51:633.85(477.4)
DOI: 10.31521/2313-092X/2021-3(111)-5

Ukrainian Black Sea Region Agrarian Science
Vol. 25, No. 3

Economic efficiency of winter rapeseed cultivation depending on the influence of technology elements in the forest-steppe of Ukraine

V. Gamayunova*
Full Doctor in Agrosciences, Professor
https://orcid.org/0000-0002-4151-0299

I. Garo
Getter
https://orcid.org/0000-0003-1846-9483

Mykolaiv National Agrarian University

Abstract. The paper presents the results of the studies conducted during 2012-2015 on common chernozem in the Forest-Steppe zone of Ukraine with winter rapeseed of the Chempion Ukrainy variety. The influence of the terms and methods of sowing and main tillage on seed yield was determined, which affected the indicators of the economic efficiency of crop production. Their determination justifies the expediency of combining the following elements: sowing in the first decade of September in rows (row spacing width 15 cm) on the background of ploughing by 25-27 cm (as the main tillage). This technology on average for 2013-2015 provided the highest level of yield – 4.54 t/ha and the following economic indicators: conditional net profit of 18.8 thousand UAH/ha, profitability – 113.6%, cost of 1 tonne of seeds – 4.5 thousand UAH

Keywords: winter rapeseed, main tillage, sowing period, sowing method, profitability, conditional net profit, prime cost

INTRODUCTION

According to these market relations, the cultivation of all agricultural crops should be accompanied by the determination of the main economic indicators. This is especially important for the introduction of new technology elements that are poorly researched for the area. Each of them, in addition to their impact on crop productivity, is characterised and differs in certain costs. It is most effective to make a profit that will indicate the feasibility of implementing this element of the technological process. Ultimately, without sufficient crop growth, it will not be profitable.

The technology of growing winter rapeseed has its own characteristics, it depends and changes on the growing area, the economic viability of the farm, the conditions of autumn vegetation, overwintering of plants, etc. The goal is to get both a high level of yield and high-quality seeds at favourable economic indicators.

LITERATURE REVIEW

The efficiency of winter rapeseed production depends on the level of crop productivity and the area of use of green mass or seeds. It is a valuable fodder and oilseed crop. In terms of food and feed qualities, it surpasses a number of agricultural

crops, including legumes. Due to the low content of erucic acid and glucosinolates in seeds, oil is produced from it, and cake and meal are used in animal husbandry [1]. In recent years, biodiesel has been produced from rapeseed seeds. This method of use

Article's History:
Received: 9.01.2021
Revised: 24.06.2021
Accepted: 26.08.2021

Suggested Citation:
Gamayunova, V., & Garo, I. (2021). Economic efficiency of winter rapeseed cultivation depending on the influence of technology elements in the forest-steppe of Ukraine. *Ukrainian Black Sea Region Agrarian Science*, 25(3), 38-45.

caused a substantial increase in demand on the world market and an increase in seed prices [2]. Therefore, the task of any agricultural technology in the modern period of management is to determine by research and select the most effective elements of technology, test them in zonal technologies for growing crops.

Any element of the improved technology should not only help to increase the level of yield, but also ensure, accordingly, optimal quality of grown products and high economic indicators. In the cultivation of agricultural crops, including winter rapeseed, the components of economic efficiency substantially depend and change under the influence of the background of nutrition, the characteristics of the variety or hybrid, the time and method of sowing, the seeding rate, and other factors [3-5]. Thus, after conducting a study with three varieties of winter rapeseed in the conditions of the Southern Steppe of Ukraine, it was determined that the use of mineral fertilisers affects the growth of conditional net profit and the level of profitability of production of this crop. In particular, due to their influence, the profitability of cultivation in the context of three hybrids increased by 1.9-4.1 times [6]. The author justifies such results by a substantial increase in both seed yield and conditional fat yield per unit area on the background of fertiliser application with the maximum efficiency of their calculated dose. The greatest influence on the indicators of economic efficiency of the fertiliser background, including their dose calculated for the programmable level of yield, was also determined for the cultivation of winter wheat varieties in the conditions of the NSPC MNAU in the Southern Steppe zone of Ukraine [7].

In addition to optimising nutrition in the cultivation of agricultural plants, it is advisable to investigate other measures and elements of technology that are low-cost and can substantially increase the productivity and quality of the crop [8-10]. The resource-saving elements of technology and measures to avoid or mitigate stressful situations, in particular, the use of biologics, should also be investigated, especially in recent years, when climate change occurs [11,12]. The high efficiency of using biologics to optimise the nutrition of plants of two varieties of spring barley was also established when determining the main indicators of economic efficiency of growing this crop on southern chernozem in the conditions of the NSPC MNAU [13].

The effectiveness of economic indicators is largely determined by the weather and climatic conditions of the year of crop cultivation, because the more favourable the year for moisture content, the higher the yield level is formed and, accordingly, the components of economic efficiency. This postulate is relevant even when growing plants on irrigation (in the studies on millet), since the amount of irrigation is reduced with optimal natural moisture [14]. This pattern is confirmed by the results of studies of growing oilseeds under irrigation and without irrigation, namely oils flax [15]. In addition to the water supply regime, the study considered plant nutrition, row spacing, and seeding rate.

The authors attribute a substantial increase in the productivity of the white mustard oil crop primarily to the effective use of moisture by plants, which is largely determined and varies depending on the amount of precipitation during the growing season, the content and accumulation of which depend on tillage [16]. In addition, the paper justifies obtaining the highest conditional net profit when using white mustard for culture by combining ploughing as the main tillage and using organic-mineral fertiliser. The profitability of growing white mustard in the context of tillage systems ranged between 93-123%.

A number of studies conducted with various agricultural crops have determined the impact of both productivity and economic efficiency of such a factor as tillage. In cultivation technologies, this element, as a rule, is the most expensive compared to other measures. In particular, tillage and other elements of the technology were investigated on rapeseed and spring wheat [17, 18]. In general, the factor of tillage, the efficiency of measure selection and depth for a particular agricultural crop substantially affects the efficiency of its cultivation [19]. In addition, the authors point to the prospect of research with methods of tillage since they are the most expensive. In recent years, due to climate change and the energy equipment of farms, it is necessary to select the most rational measures of tillage, considering resource and energy preservation, since they are among the main links of agriculture.

In addition, for researchers and producers, the question of the most correct selection of the method of tillage and its measures, which are developed and compiled for all crops of crop rotation, is indisputable. Under such conditions, as a rule, differentiated (combined) approaches to the depth and method of tillage are recommended. In the same way, fertiliser systems are determined and developed for the crop rotation crops, while considering their effect and aftereffect for subsequent crops that will be placed in the order of their alternation.

Winter rapeseed, as was already noted in this and many papers, reacts quite strongly to the background of fertiliser. The latter substantially affects the levels of seed yield and its main quality indicators [20, 21]. Issues related to plant nutrition and main tillage measures for winter rapeseed are insufficiently investigated. In

particular, in recent decades, the surface resource-saving methods of tillage using the Till and No-Till systems have become widespread. It is their application that is considered low-cost and cost-effective [22].

The purpose of the study is to determine the influence of the main elements of winter rapeseed cultivation technology, in particular, the method and depth of tillage, the time and method of sowing on seed yield, economic efficiency, and changes in its indicators due to these factors.

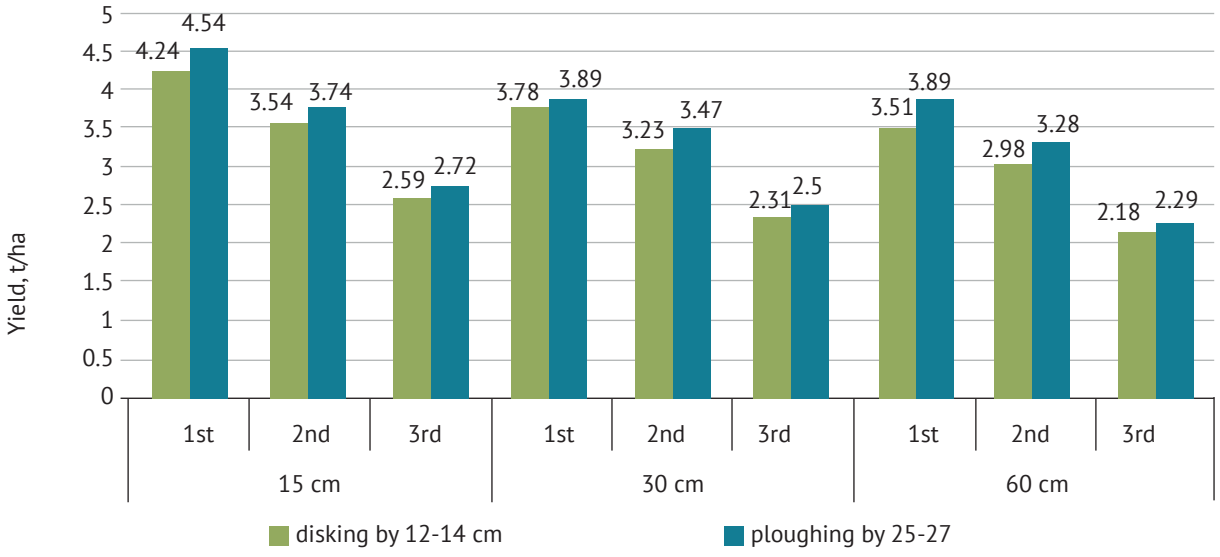
MATERIALS AND METHODS

Elements of the technology for growing winter rapeseed were investigated during 2012-2015 on ordinary chernozem in the conditions of agricultural LLC "Zoria" of the Cherkasy district of the Cherkasy region. The experiment is three-factor: factor A – main tillage – ploughing by 25-27 cm and disking by 12-14 cm; Factor B – sowing period – 1st – in the first decade of September, 2nd – in the second decade of September, 3rd – in the third decade of September; factor C – sowing method with row spacing of 15 cm, 30 cm, and 60 cm. The study was conducted with the Ukrainian variety of winter rapeseed Chempion Ukrainy.

Indicators of economic efficiency were determined by the factual cost of material resources for growing products at prices at the beginning of 2016. The cost of 1 tonne of seeds for the billing period was 9550 UAH.

RESULTS AND DISCUSSION

Certain elements of the technology of growing winter rapeseed plants and their combination primarily affected seed yield. During the years of research, crop levels varied substantially depending on the weather conditions of the growing season of the crop. In the most optimal version of the experiment for the combination of the sowing period (I decade of September) using the rows method (15 cm) on the background of ploughing to a depth of 25-27 cm, it was the highest and ranged from 3.86 to 5.02 t/ha. The average yield of winter rapeseed for three years of cultivation is shown in Figure 1.



1st – sowing period; 2nd – sowing period; 3rd –sowing period

Figure 1. *Yield of winter rapeseed depending on the time and method of sowing, type, and depth of tillage (average for 2013-2015)*

The studies determined that the yield of seeds and technology elements adopted in the cultivation of winter rapeseed had different effects on the main indicators of economic efficiency. Thus, the calculation of the cost of gross output justifies a substantial impact on this indicator of the sowing period and row spacing width, and a slight change depending on the type of the main tillage (Table 1). On average, according to factor A, ploughing to a depth of 25-27 cm contributed to an insubstantial increase in the cost of gross output by 1.7% compared with disking to a depth of 12-14 cm – from 24.8 to 25.3 thousand UAH/ha. A substantial decrease in the cost of gross output (winter rapeseed) was determined for the transfer of sowing from the first decade of September to the second and third decades of this month. Thus, for disking to a depth of 12-14 cm, this indicator was for sowing in the first decade of September, on average by factor, 30.9 thousand UAH/ha, for sowing in the second decade

it decreased to 24.8 thousand UAH/ha (by 24.4%), and in the third decade – to 18.8 thousand UAH/ha (or by 64.4%). When ploughing to a depth of 25-27 cm, this decrease was 21.9 and 78.6%, respectively.

Table 1. *Cost of gross output of winter rapeseed depending on tillage, sowing period, and row spacing width, thousand UAH/ha*

Tillage (factor A)	Sowing period (Factor B)	Row spacing width, cm (factor C)			Average by factors	
		15	30	60	B	A
Disking by 12-14 cm	1st decade of September	33.4	30.6	28.7	30.9	24.8
	2nd decade of September	26.7	24.8	22.9	24.8	
	3rd decade of September	20.1	19.1	17.2	18.8	
Ploughing by 25-27 cm	1st decade of September	35.3	31.5	28.7	31.8	25.3
	2nd decade of September	28.7	26.7	22.9	26.1	
	3rd decade of September	20.1	18.1	15.3	17.8	
Average for factor C		27.4	25.1	22.6		

The row spacing width of 15 cm provided the maximum cost of gross output, which averaged 27.4 thousand UAH/ha. For the expansion of row spacing to 30 and 60 cm, a substantial decrease in this indicator was determined – 25.1 and 22.6 thousand UAH/ha, or by 8.9 and 21.1%. A substantial reduction in the cost of the grown products indicates the expediency of increasing the width of row spacing. Production costs, in contrast to the cost of gross output, were characterised by a substantial difference in tillage options and minimal differences in the second and third factors under study (Table 2). For disking to a depth of 12-14 cm, this economic indicator averaged 15.1 thousand UAH/ha. Ploughing to a depth of 25-27 cm in experimental areas due to an increase in the cost of diesel fuel and other agricultural resources led to their increase to 16.2 thousand UAH/ha, or by 7.5%.

Table 2. *Production costs for growing winter rapeseed depending on the tillage, sowing period, and row spacing width, thousand UAH/ha*

Tillage (factor A)	Sowing period (Factor B)	Row spacing width, cm (factor C)			Average by factors	
		15	30	60	B	A
Disking by 12-14 cm	1st decade of September	15.4	15.3	15.2	15.3	15.1
	2nd decade of September	15.1	15.1	15.0	15.1	
	3rd decade of September	14.9	14.9	14.8	14.9	
Ploughing by 25-27 cm	1st decade of September	16.5	16.4	16.3	16.4	16.2
	2nd decade of September	16.3	16.2	16.1	16.2	
	3rd decade of September	16.0	15.9	15.8	15.9	
Average for factor C		15.7	15.6	15.5		

According to the variants of sowing dates, there was little difference between certain indicators of production costs. Thus, during the first sowing period, an increase in this indicator was identified for disking up to 15.3, and for ploughing – up to 16.4 thousand UAH/ha. During sowing in the second and third decades of September, this indicator slightly decreased, respectively, to 15.1 and 14.9, 15.9 and 16.2 thousand UAH/ha, or by 1.4-2.8 and 1.25-3.1%.

The width of row spacing practically did not affect production costs, since the difference between the variants under study (15; 30; 60 cm) was only 0.5-1.1%. The cost of production of 1 tonne of winter rapeseed had a clear trend towards its growth during ploughing, sowing in the 2nd and 3rd decades of September and sowing with row spacing of 30 and 60 cm (Table 3). The increase in this indicator was manifested during ploughing to a depth of 25-27 cm, at which the cost price increased,

on average, to 6.5 thousand UAH/tonne. Disking to a depth of 12-14 cm caused its decrease to 6.0 thousand UAH/tonne, or by 8.0%.

According to factor B (sowing period), the minimum cost level of 1 tonne of winter rapeseed is determined for sowing in the first decade of September – 4.7-5.0 thousand UAH. The postponement of sowing to the second and third decades of September led to an increase in this indicator by 18.5- 42.6%.

Options with row spacing of 15 cm provided the lowest cost – an average of 5.7 thousand UAH/tonne. The expansion of row spacing to 30 and 60 cm led to an increase in this indicator to 6.2 and 6.9 thousand UAH/tonne, or by 7.3 and 17.2%, respectively.

Table 3. *Cost of growing 1 tonne of winter rapeseed depending on the tillage, sowing period, and row spacing width, thousand UAH*

Tillage (factor A)	Sowing period (Factor B)	Row spacing width, cm (factor C)			Average by factors	
		15	30	60	B	A
Disking by 12-14 cm	1st decade of September	4.4	4.8	5.1	4.7	6.0
	2nd decade of September	5.4	5.8	6.3	5.8	
	3rd decade of September	7.1	7.4	8.2	7.6	
Ploughing by 25-27 cm	1st decade of September	4.5	5.0	5.4	5.0	6.5
	2nd decade of September	5.4	5.8	6.7	6.0	
	3rd decade of September	7.6	8.4	9.9	8.6	
Average for factor C		5.7	6.2	6.9		

Conditional net profit in the field experiment with winter rapeseed ranged in a very wide range – from 18.8 thousand UAH/ha for a combination of factors: ploughing to a depth of 25-27 cm; sowing in the first decade of September; row spacing of 15 cm, to a loss of 0.6 thousand UAH/ha - ploughing to a depth of 25-27 cm; sowing in the third decade; row spacing of 60 cm (Table 4).

Table 4. *Conditional net profit for growing winter rapeseed depending on the tillage, sowing period, and row spacing width, thousand UAH/ha*

Tillage (factor A)	Sowing period (Factor B)	Row spacing width, cm (factor C)			Average by factors	
		15	30	60	B	A
Disking by 12-14 cm	1st decade of September	18.1	15.3	13.5	15.6	9.8
	2nd decade of September	11.6	9.8	7.9	9.8	
	3rd decade of September	5.2	4.2	2.4	3.9	
Ploughing by 25-27 cm	1st decade of September	18.8	15.1	12.3	15.4	9.1
	2nd decade of September	12.3	10.5	6.8	9.9	
	3rd decade of September	4.0	2.2	-0.6	1.9	
Average for factor C		11.7	9.5	7.1		

Disking to a depth of 12-14 cm contributed to the growth of this indicator, on average, 9.8 thousand UAH/ha. For ploughing to a depth of 25-27 cm, the conditional net profit decreased to UAH 9.1 thousand/ha, or by 7.2%.

A substantial increase in profitability was provided by the first sowing period, which averaged 15.4-15.6 thousand UAH/ha. During sowing in the second decade of September, there was a substantial decrease in conditional net profit by 55.9-59.7%, and during the third sowing period – by 3.9-8.1 times. The most substantial decrease in profit was manifested in all variants of the experiment with ploughing to a depth of 25-27 cm.

The formation of a row spacing of 15 cm provided the maximum conditional net profit at the level of 11.7 thousand UAH/ha. With wider row spacing – 30 and 60 cm, this indicator decreased to 9.5 in 7.1 thousand UAH/ha, or by 22.7 and 65.2%, respectively.

The level of profitability of the developed elements of the cultivation technology of the crop under study – winter rapeseed reflected the trends that

were identified regarding the formation of indicators of conditional net profit (Fig. 2). For disking to a depth of 12-14 cm, higher profitability was obtained – 64.4%, compared with ploughing to 25-7 cm – 55.5%.

The trend of a substantial decrease in the level of profitability from the first sowing period (93.8-102.1%) to the second (60.9-64.8%), and especially the third (11.8-26.4%) was clearly traced. Thus, the difference between sowing in the first and second decades of September was, on average, 54.9-57.6 relative per cent, and between the first and third terms – 3.9-7.9 times.

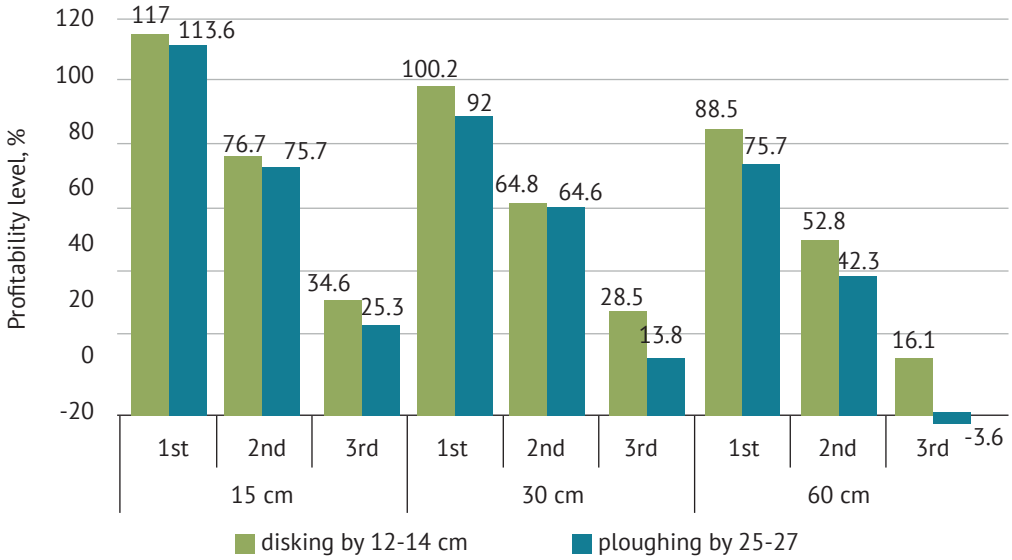


Figure 2. *The level of profitability of growing winter rapeseed depending on the tillage, sowing period, and row spacing width*

The lowest profitability (45.3%) was determined for sowing with row spacing of 60 cm. In the variants with row spacing of 15 and 30 cm, this indicator increased substantially and averaged 73.9 and 60.7% for this factor, or increased by 21.8-63.1 relative per cent.

CONCLUSIONS

The examined factors in the cultivation of winter rapeseed of the Chempion Ukrainy variety during 2012-2015 substantially affected the level of seed yield. The maximum yield – 4.54 t/ha on average for 2013-2015 was formed by combining the following elements of the technology: sowing in the first decade of September in the usual rows method (15 cm) on the background of ploughing by 25-27 cm as the main tillage. Shifting the sowing dates to the second and third decades of September, increasing the width of row spacing to 30 and 60 cm, and disking by 12-14 cm led to a decrease in the yield of winter rapeseed grain.

The determination of components of economic efficiency showed that the cost of gross output of winter rapeseed during ploughing increased, but the cost of its cultivation caused a slight decrease in conditional net profit, which on average for factors on the background of disking was 9.8, and ploughing – 9.1 thousand UAH/ha.

Regarding the optimisation and selection of the sowing period, the highest profit was for its implementation in the first decade of September – for disking – 15.6 thousand UAH/ha, and ploughing – 15.4 thousand UAH/ha on average for all row spacing. According to the latter factor, the highest yield was provided by rows sowing with row spacing of 15 cm, with an increase to 30 and 60 cm, this indicator decreases.

The level of profitability is closely correlated with the value of net profit and changes. On average, for disking options by 12-14 cm, it was 64.4%, and ploughing – 55.5%. For the first period of sowing according to these methods of tillage, the profitability was the highest – 102.1 and 93.8%, respectively, for all methods of sowing, and for row spacing of 15 cm – 117.5 and 113.6%. With later sowing and expansion of row spacing, this indicator decreased.

Thus, the highest yield of seeds and the most favourable indicators of economic efficiency for growing winter rapeseed in the conditions of the Forest-Steppe of Ukraine provides the use of such elements: sowing in the first decade of September in the usual rows way (15 cm), and as the main tillage - ploughing to a depth of 25-27 cm. This combination of factors prevails over other measures and options under study. It is advisable to recommend it for production for growing winter rapeseed.

REFERENCES

[1] Kokovikhin, S.V., Donets, A.O., Husiev, M.H., Fedorchuk, M.I., & Mrynskyj, I.M. (2012). *Agrotechnical and organizational and economic aspects of rapeseed production in southern Ukraine* (176). Kherson: Ailant.

[2] Tokarchuk, D.M. (2018). Management measures to improve the efficiency of rapeseed production. *Herald of Socio-Economic Research*, 1(65), 125-133.

[3] Takalić, M., & Blažičević, S. (2014). Economic analysis of rape production. *Agricultura* – Ştiinţă şi *practică*, 3-4(91-92), 5-12.

[4] Pasichnyk, N.A., Lysenko, V.P., Bykin, A.V., & Opryshko, O.O. (2020). Indicative stress indices of a technological nature for winter rapeseed. *Scientific Reports of NULES of Ukraine*, 3(85). doi: 10.31548/dopovidi2020.03.007.

[5] Pasichnyk, N.A., Opryshko, O.O., Lysenko, V.P., & Komarchuk, D.S. (2021). Information technologies for remote assessment of the aftereffect of herbicides on winter rapeseed crops. *Scientific Reports of NULES of Ukraine*, 2(90). doi: 10.31548/dopovidi2021.02.008.

[6] Vlashchuk, A.M., Kokovikhin, S.V., & Donets, A.O. (2012). Modeling the costs of agricultural resources in the technological process of winter rape seed production in the conditions of southern Ukraine. *Irrigated Agriculture*, 58, 159-163.

[7] Gamayunova, V.V., & Smirnova, *I.*V. (2018). Economic efficiency of growing winter wheat varieties depending on nutrition optimization. *Scientific Horizons*, 1(64), 10-14.

[8] Antonenko, O.F., & Savchuk, Yu.M. (2016). The influence of sowing dates and microfertilizers on the development of winter rapeseed plants in the conditions of the Right Bank Forest Steppe of Ukraine. *Scientific Horizons*, 1(53), 87–94.

[9] Pekhov, V.A. (2016). Grain production and formation of efficiency of agricultural enterprises. *Economy of ACC,* 8, 110-120.

[10] Kvasnitska, L.S. (2020). Comprehensive assessment of crop rotations with different saturation of oil crops in the conditions of the Right Bank Forest Steppe. *Scientific Horizons*, 7(92), 40-44. doi: 10.33249/2663-2144-2020-92-7-40-44.

[11] Huang, H., Ullah, F., Zhou, D.-X., Yi, M., & Zhao, Y. (2019). Mechanisms of ROS regulation of plant development and stress responses. *Front Plant Sci*, 10, 800. doi: 10.3389/fpls.2019.00800.

[12] Vozhegova, R.A., & Kryvenko, A.I. (2019). The influence of biological preparations on the productivity of winter wheat and the economic and energy efficiency of its cultivation technology in the conditions of Southern Ukraine. *Ukrainian Black Sea Region Agrarian Science*, 1(101), 39-46. doi: 10.31521/2313-092X/2019-1(101)-6.

[13] Gamayunova, V.V., Kasatkina, T.O., & Baklanova, T.O. (2021). Agro-economic evaluation of the effectiveness of the use of biological preparations in the cultivation of spring barley in the conditions of the Southern Steppe of Ukraine. *Agrology*, 4(2), 65-70. doi: 10.32819/021008.

[14] Averchev, O.V., & Hubenia, Yu.E. (2012). Economic efficiency of growing millet in the conditions of irrigation in the south of Ukraine. *Taurian Scientific Bulletin*, 80(2), 183-186.

[15] Ushkarenko, V.O., Lazer, P.N., & Rudik, *O.*L. (2012). Features of the elements of the technology of growing oil flax in the conditions of the South of Ukraine. *Taurian Scientific Bulletin*, 80(2), 198-202.

[16] Kyrykiuk, V.P., Tymoshchuk, T.M., & Kalchuk, M.M. (2019). The yield of white mustard depends on the systems of the main tillage and fertilization. *Scientific Horizons*, 2(75), 27-33. doi: 10.332491/2663-2144-2019-75-2-27-33.

[17] Snizhok, O.V., & Yuvchyk, N.O. (2021). Species composition of harmful organisms in winter rapeseed crops depending on soil cultivation and protection system. *Cereal Crops: Scientific Journal*, 5(1), 145-152. doi: 10.31867/2523-4544/0171.

[18] Hrynyk, S.I. (2018). Efficiency of spring wheat cultivation depending on soil cultivation and nutrition system in the conditions of Precarpathia. *Taurian Scientific Bulletin*, 104, 40-46.

[19] Kyryliuk, V.P., Krychkivskyj, V.M., & Kovalchuk, N.V. (2020). The effect of long-term use of tillage and fertilization systems on the soil structure. *Scientific Horizons*, 8(93), 119-124.

[20] Poliovyk, V.M., Lukashuk, L.Ya., Rovna, H.F., & Huk, B.V. (2020). Productivity of winter rape depending on fertilization and liming in the conditions of Western Polissia. *Cereal Crops*, 4(1), 108-115. doi: 10.31867/2523-4544/0113.

[21] Kurach, O.V. (2021). The effect of fertilizer on the productivity of winter rape in the conditions of the western forest-steppe. *Cereal Crops*, 5(1), 92-98.

[22] Nadykto, V., Rohach, Yu., Kovbasa, V. (2009). One more time about Till and No-Till. *Ukrainian Magazine on Agribusiness,* 5, 96-9.

Економічна ефективність вирощування ріпаку озимого залежно від впливу елементів технології в умовах лісостепу України

В. В. Гамаюнова

Доктор сільськогосподарських наук, професор
https://orcid.org/0000-0002-4151-0299

І. М. Гаро

Здобувач
https://orcid.org/0000-0003-1846-9483
Миколаївський національний аграрний університет

Анотація. У статті наведено результати досліджень, проведених упродовж 2012-2015 рр. на чорноземі звичайному в зоні Лісостепу України з ріпаком озимим сорту Чемпіон України. Визначено вплив строків і способів сівби та основного обробітку ґрунту на врожайність насіння, що позначилося на показниках економічної ефективності виробництва культури. Їх визначенням обґрунтовано доцільність поєднання наступних елементів: сівба у І декаду вересня рядковим способом (ширина міжрядь 15 см) по фону оранки на 25-27 см (у якості основного обробітку ґрунту). Така технологія у середньому за 2013-2015 рр. забезпечила отримання найвищого рівня врожаю – 4,54 т/га і наступні економічні показники: умовно чистий прибуток 18,8 тис. грн/га, рівень рентабельності – 113,6 %, собівартість 1 т насіння – 4,5 тис. грн.

Ключові слова: ріпак озимий, захід основного обробітку ґрунту, строк сівби, спосіб сівби, рентабельність, умовно чистий прибуток, собівартість