

**RESPONSE OF PROMISING WINTER WHEAT VARIETIES
IN TERMS OF YIELD TO GROWING CONDITIONS**

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Topicality. The genetic potential of winter wheat varieties is underutilized, which is one of the many reasons that led to the problem of food grain shortage in Ukraine. Realization of the genetic potential of the variety is possible with the implementation of the entire complex of agrotechnological measures and seed cultivation technologies. Productivity of varieties with different genotypes depends largely on the previous crops, sowing dates and weather conditions during the growing season. **Purpose** of our research was to determine the influence of predecessors and sowing dates, as well as the interdependence between them, on the yield potential of new winter wheat varieties of Myronivka selection in the conditions of the Central Forest-Steppe of Ukraine. **Materials and Methods.** The research was conducted in a field trial of the V. M. Remeslo Myronivka Institute of Wheat NAAS of Ukraine, located in the Central Forest-Steppe of Ukraine, in 2018/19–2020/21 (factor A – year). The object of the research were five new winter wheat varieties bred by the V. M. Remeslo Myronivka Institute of Wheat (MIP Fortuna, MIP Lada, MIP Yuvileina, Avrora Myronivska, MIP Lakomka), which were compared with the standard – Podolianka variety (factor B). The experiments were laid down after two previous crops, namely, sunflower and soybean (factor C); sowing was carried out on September 25 and October 5 with a deviation within 1–3 days (factor D). Coefficients for significance of deviations in air temperature (°C) and the precipitation amount (mm) was determined according to the methodology of Ped D. A. (1975) and Kalenska S. V. (2018). **Results.** During the years of research, weather conditions varied significantly, which allowed us to objectively assess the material. We investigated the yield of new winter wheat varieties bred by the V. M. Remeslo Myronivka Institute of Wheat depending on the previous crops and sowing dates. It was determined that soybean was the best previous crop among the investigated ones, as well as the best sowing date – September 25. Over the years of study, on average, these factors contributed to the maximum yield of new crop varieties. **Conclusions.** According to the studying varietal differences, it was determined that the highest yield (6.24 t/ha) in to the experiment was formed by the MIP Yuvileina variety with the first sowing date (September 25); for two sowing dates (September 25 and October 5) the highest yield was observed for the MIP Fortuna variety (5.46 and 5.47 t/ha).

Key words: winter wheat, variety, yield, weather conditions, previous crop, sowing date

Introduction. Nowadays, an important task of landowners is to obtain high-quality grain products, especially winter wheat. Insufficient utilization of the genetic potential of crop varieties is one of the many reasons that contribute to the problem of food grain quality in Ukraine [1, 2].

The realization of the genetic potential of the variety at the level of 70–80 % is possible provided that the whole complex of agrotechno-

logical measures and strict seed growing technology are implemented [3]. A variety, as a means of production, along with technology, is a powerful measure of influence on nature and a method of efficient land use [4, 5], which must be adapted to the soil and climatic conditions of the growing area and other environmental factors.

Sowing date is one of the factors that affects the growth and development of winter wheat, its frost and winter hardiness and produc-

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tivity. The productivity of different genotypes for wheat varieties depends largely on the previous crops, sowing dates and weather conditions during the growing season. The best previous crops should guarantee a high grain yield of good quality and meet the phytosanitary and entomosanitary conditions of the crops [6].

Research by scientists in previous years [7–10] has shown that winter wheat can fully utilize all the necessary factors to produce the highest yield only when sown at the best dates, which depends on a number of factors. Climate change (rising average annual temperature by 1.3–2.5 °C, unfavourable dry conditions in autumn and reducing winter period) and the diversity of wheat varieties require additional research into the features of their cultivation.

Purpose of the research is to determine the yield potential of new winter wheat varieties of Myronivka selection depending on previous crops and sowing dates in the Central Forest-Steppe of Ukraine.

Materials and Methods. Research was conducted in the field trial by V. M. Remeslo Myronivka Institute of Wheat of NAAS located in the Central Forest-Steppe of Ukraine - south-eastern part of Kyiv region in the watershed divide of Ros and Dnipro rivers in the growing years 2018/19–2020/21 (factor – A (year)).

The object of research was five new varieties of winter wheat of Myronivka selection (MIP Fortuna, MIP Lada, MIP Yubileina, Avrora Myronivska, MIP Lakomka) – factor B (variety).

MIP Fortuna variety (*Triticum aestivum* L.). Date of registration – 2019. The variety is *Lutescens*, highly productive, medium early, with high winter hardiness and drought resistance, resistant to lodging, grain shedding and germination in the ear. It is resistant to root rot, powdery mildew, brown rust, leaf septoria, stem (linear) rust, fusarium ear blight, head and loose smut. It has group resistance against the main pathogens of wheat based on the use of artificial complex infectious background. Grain volume weight is from 755 to 940 g/l, protein content – 13.9–14.8 %, crude gluten – 23.6–27.8 %, flour strength – 295–372 u.a., bread volume – 900–1,120 cm³. The variety consistently produces high grain yields after row crops such as sunflower, maize and soybeans. Synchronous development of the stem stand provides a high yield of grain mass from the plant [11].

MIP Lada variety (*Triticum aestivum* L.). Date of registration – 2019. The variety is *Lutescens*, highly productive, mid-ripening, winter hardiness and drought resistance are high. The vernalization period is 30–40 days. Photoperiodic sensitivity is weak. The period of post-harvest ripening is short. It is resistant to lodging and grain germination in the ear. The variety is resistant to fusarium ear blight, powdery mildew, brown rust, leaf and ear septoria. Grain volume weight is from 620 to 790 g/l. Protein content is 13.6–14.2 %, crude gluten – 23.8–27.8 %, flour strength – 285–345 u.a., bread volume – 810–960 cm³. The variety has high frost resistance compared to modern varieties. It is an ideal for low-fertility soils. Excellent milling and baking properties [11].

MIP Yubileina variety (*Triticum aestivum* L.). Date of registration – 2019. Variety is *Lutescens*, high-yielding, mid-ripening, high winter hardiness, high drought resistance. The vernalization period is 40–50 days. Photoperiodic sensitivity is medium. The period of post-harvest ripening is long. It is resistant to lodging, grain shedding and germination in the ear. It is resistant to powdery mildew, brown rust, leaf septoria and ear fusarium, and medium resistant to hard smut. Grain volume weight is from 740 to 790 g/l. Protein content is 13.5–14.8 %, crude gluten – 23.8–28.8 %, flour strength – 290–380 u.a., bread volume – 900–1200 cm³. It combines high yields with stable grain quality. Its milling and baking properties are excellent. It responds well to high mineral nutrition, and produces high yields in dry conditions [11].

Avrora Myronivska variety (*Triticum aestivum* L.). Date of registration – 2021. The variety is *Erythrospermum*, highly productive, early ripening, medium winter hardiness, high drought resistance. The vernalization period is 30–40 days. The period of post-harvest ripening is average. It is resistant to lodging and ear breaking off. It is resistant to grain shedding and germination in the ear. It is resistant to brown rust, powdery mildew, leaf septoria and ear fusarium, and hard smut. The variety is for food purposes. Grain volume weight is from 780 to 808 g/l. Protein content – 12.6–17.6 %, crude gluten – 28.7–32.5 %, flour strength – 250–300 u.a. High tillering coefficient. It is characterized by rapid regrowth in the early stages of development. It is suitable for irrigated cultivation and growing

in conditions of excessive moisture [11].

MIP Lakomka variety (*Triticum durum* Desf.). Date of registration is 2019. Variety – *Lutescens*, highly productive, mid-ripening, medium winter hardiness. High drought resistance. The vernalization period is 40–50 days. Strong photoperiodic sensitivity. The period of post-harvest ripening is long. It is resistant to lodging and ear breaking off. It is resistant to grain shedding and germination in the ear. It is resistant to brown rust, powdery mildew, leaf septoria and fusarium head blight, and head smut. It is food grade wheat. Grain weight is from 620 to 680 g/l. Protein content – 12.6–13.4 %, crude gluten – 22.7–25.6 %, flour strength – 255–316 u.a. It is unpretentious to growing conditions, environmental flexibility. High tillering coefficient. It is characterized by rapid regrowth in the early stages of development. Suitable for irrigated cultivation. Ideal for growing in conditions of excessive wetting [11].

Podolianka variety (standard) (*Triticum aestivum* L.). Date of registration – 2003. Variety is *Lutescens*, high-yielding, mid-early, high winter and drought resistance, medium resistant to lodging, resistant to grain shedding and germination in the ear. It has medium resistance to root rot, powdery mildew, brown rust, leaf septoria, fusarium head blight, and head smut. Strong wheat. Protein content is 13.5 to 14.7 %, crude gluten is 28.7–31.5 %, flour strength is 320–419 u.a., and bread volume is 890–1200 cm³. The variety combines high yield with stable grain quality. The milling and baking properties are excellent [12].

The field trials were laid out after two previous crops: sunflower and soybean – factor C (previous crop), sowing was carried out on 25 September and 5 October with a deviation of 1–3 days – factor D (sowing date).

The significance coefficients of air temperature (°C) and precipitation (mm) deviation were determined by gradation: $C_s < 1$ – conditions close to normal; $C_s = 1-2$ – conditions that differ greatly from long-term averages; $C_s > 2$ – conditions close to rare [13].

The significance coefficient (C_s) of deviations in actual data of average daily temperature and precipitation from the long-term average was used for statistical analysis of the patterns of variation of meteorological indicators [14].

Results and Discussion. Temperature and

moisture supply are among the main environmental factors that significantly affect the growth and development of wheat plants. In order to identify dynamics in meteorological indicators, we analysed weather conditions for 2018–2021 and compared them with the long-term average (for the last 30 years). For this purpose, the data from the Myronivka meteorological station located on the territory of the Myronivka Institute of Wheat were used. Weather conditions during the years of research varied significantly, and this allowed us to objectively assess the material.

It was observed that the average monthly air temperature varied greatly over the years of growth season of the crop (Table 1). In winter, the largest variation in air temperature was observed in February – $R = 7.1$ °C (max = 2.3 °C in 2020, min = –4.8 °C in 2021). In spring, the largest difference was in March – $R = 8.3$ °C (max = 6.5 °C in 2020, min = –1.8 °C in 2018). In summer, the largest difference by month was in June and July – $R = 2.5$ °C (max = 22.7 °C in June 2019 and 22.1 °C in July 2021, min = 19.6 °C in July and min = 20.3 °C in June 2019). In autumn, the largest variation in air temperature was observed in November – $R = 4.2$ °C (max = 4.8 °C in 2019, 2021, min = 0.6 °C in 2018). For 2018–2021, the average air temperature was 2.1 °C higher than the long-term average. The temperature rising was observed for all months without exception: from 0.7 °C (May) to 3.2 °C (June).

The significance coefficient of air temperature deviations was close to normal: in January – March, June, July, September, November and December 2018; January – November 2019; April, May, July, August and November 2020; January – December 2021.

Conditions that differed significantly from the long-term average were observed in April, May, August, and October 2018; February, March, June, and December 2019; and March, June, September, October, and December 2020.

Conditions close to rare were recorded in June (significance coefficient of deviation – 2.8) in 2019, January (4.9) and February (2.8) in 2020.

The average monthly precipitation varied by year in all months of the study (Table 2). In winter, the largest variation in precipitation was observed in January – $R = 52.1$ mm (max = 71.9 mm

Table 1. Average monthly air temperature (°C) and the significance coefficient of its deviations in the years of research from the long-term average

| Year | Month | | | | | | | | | | | |
|--|-------|------|------|------|------|------|------|------|------|------|------|------|
| | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII |
| 2018 | -3.0 | -3.7 | -1.8 | 13.3 | 18.4 | 20.2 | 20.9 | 22.1 | 16.9 | 10.6 | 0.6 | -2.0 |
| 2019 | -5.0 | 0.3 | 4.6 | 10.4 | 16.8 | 22.7 | 19.6 | 20.3 | 15.7 | 10.9 | 4.8 | 2.8 |
| 2020 | 0.7 | 2.3 | 6.5 | 9.6 | 12.8 | 21.7 | 21.6 | 21.2 | 18.5 | 13.1 | 3.8 | -0.3 |
| 2021 | -2.5 | -4.8 | 2.1 | 7.5 | 14.4 | 20.2 | 22.1 | 20.4 | 13.1 | 7.6 | 4.8 | -1.1 |
| X | -2.5 | -1.5 | 2.9 | 10.2 | 15.6 | 21.2 | 21.1 | 21.0 | 16.1 | 10.6 | 3.5 | 0.2 |
| min | -5.0 | -4.8 | -1.8 | 7.5 | 12.8 | 20.2 | 19.6 | 20.3 | 13.1 | 7.6 | 0.6 | -2.0 |
| max | 0.7 | 2.3 | 6.5 | 13.3 | 18.4 | 22.7 | 22.1 | 22.1 | 18.5 | 13.1 | 4.8 | 2.8 |
| R | 5.7 | 7.1 | 8.3 | 5.8 | 5.6 | 2.5 | 2.5 | 1.8 | 5.4 | 5.5 | 4.2 | 4.8 |
| LT | -4.6 | -3.3 | 1.3 | 8.9 | 14.9 | 18.0 | 18.0 | 19.0 | 14.1 | 8.0 | 1.5 | -2.9 |
| +LT | 2.1 | 1.8 | 1.6 | 1.3 | 0.7 | 3.2 | 3.1 | 2.0 | 2.0 | 2.6 | 2.0 | 2.7 |
| Significance coefficient of temperature deviations | | | | | | | | | | | | |
| 2018 | 0.3 | -0.1 | -0.6 | 1.7 | 1.3 | 0.5 | 0.7 | 1.9 | 0.8 | 1.2 | -0.2 | 0.4 |
| 2019 | -0.1 | 2.0 | 1.4 | 0.4 | 0.6 | 2.8 | 0.0 | 0.6 | 0.4 | 0.8 | 0.6 | 2.0 |
| 2020 | 4.9 | 2.8 | 1.5 | 0.2 | -1.0 | 1.3 | 0.8 | 0.8 | 1.5 | 1.7 | 0.8 | 1.2 |
| 2021 | 0.4 | -0.3 | 0.3 | -0.6 | -0.2 | 0.8 | 0.4 | 0.6 | 0.6 | -0.2 | 0.9 | 0.4 |

Notes: X, max, min, R - mean, maximum, minimum and range of variation for 2018-2021;
LT - long-term average for 30 years.

in 2018, min = 19.8 mm in 2020). In spring, the largest difference was in March – R = 81.6 mm (max = 93.5 mm in 2018, min = 11.9 mm in 2020). In summer, the largest difference was recorded in July – R = 89.6 mm (max = 111.2 mm in 2021, min = 21.6 mm in 2020) and August – R = 81.8 mm (max = 89.4 mm in 2021, min = 7.6 mm in 2020). In autumn, the largest variation in precipitation over the years of study was

observed in September – R = 68.1 mm (max = 79.8 mm in 2018, min = 11.7 mm in 2019). Compared to the average long-term norm (582.0 mm), the amount of precipitation for 2018–2021 was 539.3 mm, which was 42.7 mm lower. This indicates that for the genetically inherent yield potential of modern Myronivka winter wheat varieties, the amount of precipitation in its growing season is insufficient.

Table 2. Total precipitation (mm) and significance coefficient of deviations from the long-term average

| Year | Month | | | | | | | | | | | |
|--|-------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII |
| 2018 | 71.9 | 37.1 | 93.5 | 21.1 | 33.3 | 95.0 | 79.2 | 14.7 | 79.8 | 28.5 | 20.1 | 71.9 |
| 2019 | 40.1 | 26.2 | 27.4 | 23.4 | 50.3 | 87.1 | 50.0 | 9.9 | 11.7 | 6.1 | 16.0 | 36.6 |
| 2020 | 19.8 | 51.6 | 11.9 | 47.5 | 92.5 | 57.2 | 21.6 | 7.6 | 21.3 | 38.6 | 27.9 | 38.1 |
| 2021 | 57.1 | 33.8 | 28.7 | 47.0 | 87.4 | 109.5 | 111.2 | 89.4 | 18.3 | 17.8 | 25.7 | 63.8 |
| X | 47.2 | 37.2 | 40.4 | 34.8 | 65.9 | 87.2 | 65.6 | 30.4 | 32.8 | 22.8 | 22.4 | 52.6 |
| min | 19.8 | 26.2 | 11.9 | 21.1 | 33.3 | 57.2 | 21.6 | 7.6 | 11.7 | 6.1 | 16.0 | 36.6 |
| max | 71.9 | 51.6 | 93.5 | 47.5 | 92.5 | 109.5 | 111.2 | 89.4 | 79.8 | 38.6 | 27.9 | 71.9 |
| R | 52.1 | 25.4 | 81.6 | 26.4 | 59.2 | 52.3 | 89.6 | 81.8 | 68.1 | 32.5 | 11.9 | 35.3 |
| LT | 29.5 | 28.7 | 31.8 | 42.1 | 51.2 | 85.2 | 86.5 | 59.4 | 51.1 | 35.6 | 42.3 | 38.6 |
| ±LT | +17.7 | +8.5 | +8.6 | 7.3* | +14.7 | +2.0 | 20.9* | 29.0* | 18.3* | 12.8* | 19.9* | +14.0 |
| Significance coefficient of precipitation deviations | | | | | | | | | | | | |
| 2018 | 5.8 | 3.4 | 19.1 | -2.2 | -6.3 | 1.4 | -2.0 | -10.8 | 5.0 | -2.1 | -9.2 | 9.7 |
| 2019 | 7.1 | -0.7 | -2.2 | -6.9 | -0.3 | 0.2 | -7.1 | -39.0 | -15.5 | -77.3 | -15.1 | -1.1 |
| 2020 | -6.4 | 4.0 | -9.9 | 0.4 | 9.8 | -5.3 | -19.5 | -33.0 | -3.7 | 0.8 | -5.4 | -0.2 |
| 2021 | 11.3 | 1.4 | -2.2 | 1.3 | 6.6 | 4.2 | 2.7 | 1.9 | -11.7 | -2.8 | -7.1 | 7.6 |

Notes: X, max, min, R - mean, maximum, minimum and range of variation for 2018-2021;
LT - long-term average for 30 years; * - decrease in precipitation per month (dry conditions).

The significance coefficient of precipitation deviations was close to normal (significant precipitation shortage) in April – August, October and November 2018; February – December 2019; January, March, April, June – December 2020; March, September – November 2021.

Conditions (moderate drought) that differed significantly from the long-term average were observed in June 2018; February, March, June and December 2019; and February 2021.

Conditions close to rare (significant

amount of precipitation) were recorded in January – March, September and December 2018; January 2019; February, May 2020; January, May – July and December 2021.

Yield of *Triticum aestivum* L. varieties (MIP Fortuna, MIP Lada, MIP Yuvileina, Avrora Mironivska) by two sowing dates (25 September and 5 October) after sunflower varied from 2.14 to 7.13 t/ha, MIP Lakomka (*Triticum durum* Desf.) – 1.33–5.12 t/ha, Podolianka (*Triticum aestivum* L.) – 2.90–5.96 t/ha (Table 3).

Table 3. Yield (t/ha) of winter wheat after sunflower (2019–2021)

| Variety | 2019 | | 2020 | | 2021 | |
|-----------------------|------|------|------|------|------|------|
| | I* | II** | I* | II** | I* | II** |
| MIP Fortuna | 7.13 | 5.60 | 2.33 | 3.76 | 6.15 | 5.76 |
| MIP Lada | 5.12 | 4.74 | 2.14 | 2.26 | 5.88 | 5.59 |
| MIP Yuvileina | 6.45 | 5.24 | 3.59 | 3.30 | 6.51 | 5.98 |
| Avrora Myronivska | 5.04 | 4.60 | 2.83 | 2.42 | 5.25 | 4.45 |
| MIP Lakomka | 5.02 | 5.12 | 2.54 | 1.33 | 4.69 | 3.61 |
| Podolianka (standard) | 4.91 | 5.34 | 2.90 | 4.16 | 5.59 | 5.96 |
| min | 4.91 | 4.60 | 2.14 | 1.33 | 4.69 | 3.61 |
| max | 7.13 | 5.60 | 3.59 | 4.16 | 6.51 | 5.98 |
| X | 5.61 | 5.11 | 2.39 | 2.71 | 5.76 | 5.38 |
| LSD _{0.5} | 0.44 | 0.20 | 0.29 | 0.57 | 0.36 | 0.47 |

Notes: X, max, min, - average, maximum, minimum values for 2019-2021, respectively;

* - sowing date – 25 September,

** - sowing date – 5 October

The best yield indicators after the sunflower in 2019 by two sowing dates (25 September, 5 October) were determined in the MIP Fortuna variety, which exceeded the standard variety by 2.22 and 0.26 t/ha, respectively (Table 3). In 2020, at the first sowing date of 25 September and in 2021, at the sowing dates of 25 September and 5 October, the MIP Yuvileina

variety exceeded the standard by 0.69, 0.92 and 0.02 t/ha, respectively. At sowing on 25 September, the highest average yield for the three years of the study was observed in the MIP Yuvileina variety (5.52 t/ha) (Fig. 1). At the second sowing date on October 5, the best values of the average yield were obtained in the Podolianka standard variety (5.15 t/ha) and MIP Fortuna (5.04 t/ha).

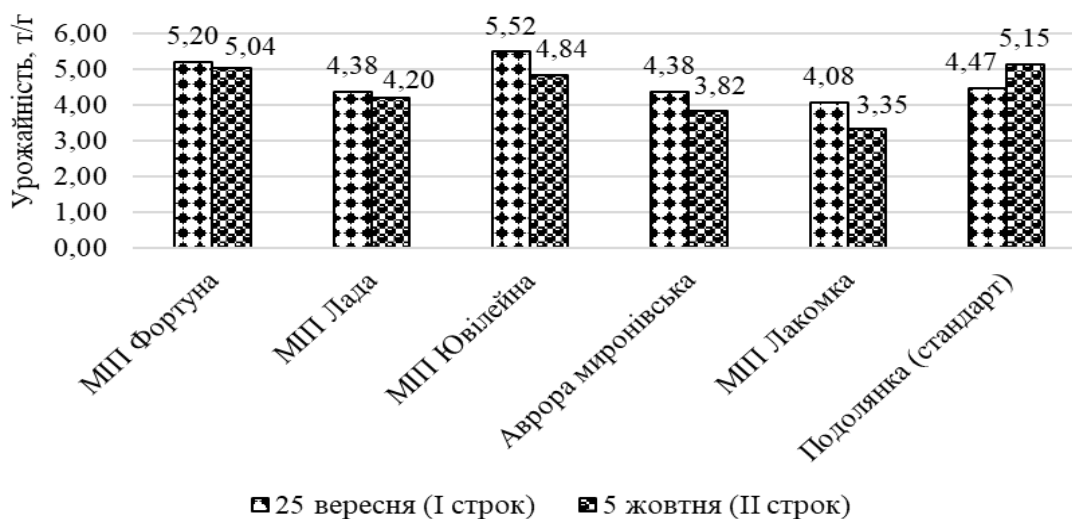


Fig. 1. Average yield (t/ha) of winter wheat varieties after the sunflower by sowing dates (2019–2021).

The average yield of the studied sampling for wheat varieties sown on 25 September and 5 October after the soybean differed from 1.81 to 7.76 t/ha. The maximum yield of MIP Lakomka variety (durum winter wheat) was obtained for sowing on September 25 in 2019 and 2021 (6.07 and 5.49 t/ha, respectively). After soybean as a previous crop, at the first sowing date (25 Sep-

tember), a significant yield was recorded for the MIP Yuvileina variety of soft winter wheat in 2019 – 7.76 t/ha and in 2022 – 3.99 t/ha, respectively. The maximum yield was recorded in 2021 in the MIP Fortuna variety (7.14 t/ha), which was higher by 1.05 t/ha than the Podolianka standard variety (6.09 t/ha) at the first sowing date (25 September) (Table 4).

Table 4. Yield (t/ha) of winter wheat after soybean (2019–2021)

| Variety | 2019 | | 2020 | | 2021 | |
|-----------------------|------|------|------|------|------|------|
| | I* | II** | I* | II** | I* | II** |
| MIP Fortuna | 5.69 | 6.03 | 3.57 | 3.50 | 7.14 | 6.86 |
| MIP Lada | 7.13 | 5.28 | 2.21 | 2.01 | 6.36 | 6.52 |
| MIP Yuvileina | 7.76 | 4.51 | 3.99 | 3.51 | 6.98 | 6.98 |
| Avrora Myronivska | 6.26 | 3.94 | 2.81 | 2.49 | 5.25 | 5.52 |
| MIP Lakomka | 6.07 | 3.63 | 2.41 | 2.93 | 5.46 | 4.76 |
| Podolianka (standard) | 6.85 | 5.60 | 3.40 | 3.70 | 6.09 | 6.04 |
| min | 5.69 | 3.63 | 1.81 | 2.01 | 5.46 | 4.76 |
| max | 7.76 | 6.03 | 3.99 | 3.70 | 7.14 | 6.98 |
| X | 6.63 | 4.83 | 2.90 | 2.86 | 6.41 | 6.23 |
| LSD ₀₅ | 0.41 | 0.48 | 0.44 | 0.34 | 0.34 | 0.44 |

Notes: X, max, min, - average, maximum, minimum values for 2019–2021, respectively;

* - sowing date – 25 September,

** - sowing date – 5 October

At the same time, a varietal response was observed. At the first sowing date (September 25), the highest average yield of 6.24 t/ha for three years was established in the MIP Yu-

vileina variety (Fig. 2). At two sowing dates, the highest average yield was recorded in the MIP Fortuna variety (5.46 and 5.47 t/ha, respectively).

Regardless of the sowing dates, the avera-

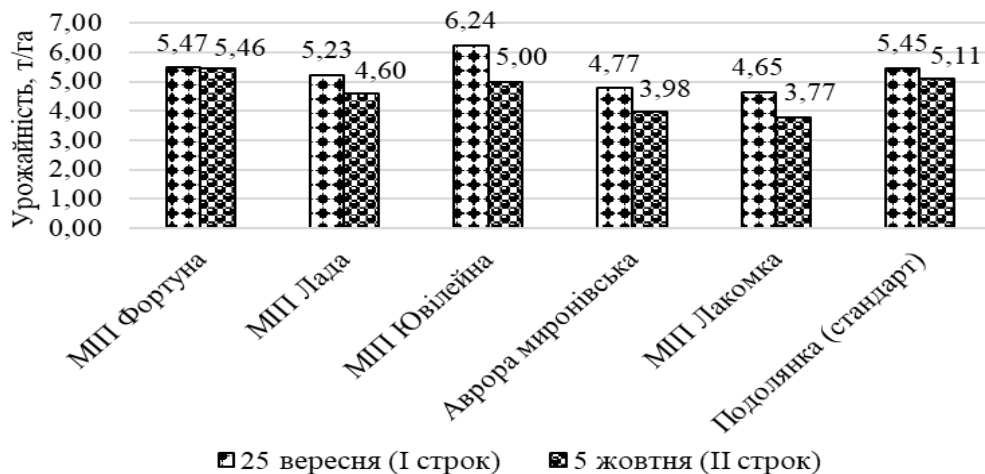
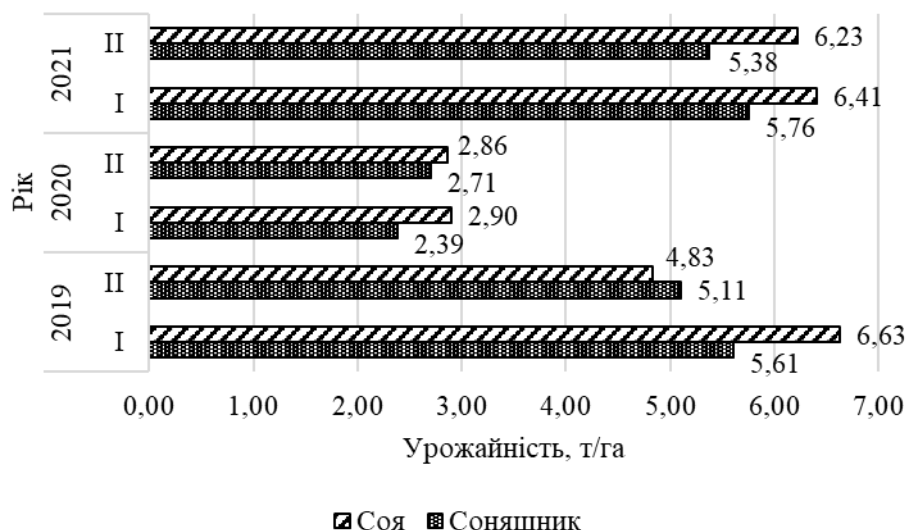


Fig. 2. Average yield (t/ha) of winter wheat varieties after soybean as a previous crop by sowing dates in 2019–2021.

ge yield for the studied variety sampling after the soybean was higher and varied from 2.86 to 6.63 t/ha compared to the sunflower – 2.39–5.76 (Fig. 3). In the favourable 2019 and 2021, all varieties after sunflower and soybean had higher yields when sown on 25 September. Properly

selected sowing date is the only factor for timely and even sprouting of crop, which significantly affects the grain yield. It is noted that the negative impact of the first sowing date (25 September) was intensified by the dry conditions of the 2019/20 growing season (especially in September



Notes: I – first sowing date (25 September), II – second sowing date (5 October)

Fig. 3. Average yield (t/ha) in the trial for winter wheat varieties after soybean and sunflower for 2019–2021.

2019, when the lowest rainfall was 11.7 mm, which negatively affected the wheat plant development and, in the future, the low yields.

Conclusions. It was found a significant influence of weather conditions on the yield of winter wheat, which largely depended on the hydrothermal conditions during the growing season. In the face of climate change, soybeans remain the best and most reliable previous crop for winter wheat and provide a higher grain

yield. According to the results of a three-year study (2019–2021), the best date for sowing winter wheat in the central Forest-Steppe of Ukraine is 25 September. According to the results of the study of varietal differences, it was determined that the highest yield in the trial was recorded by the MIP Yuvileina variety (6.24 t/ha) at the first sowing date (25 September), and the MIP Fortuna variety (5.46 and 5.47 t/ha) at sowing on 25 September and 5 October.

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Лось Р. М.¹, Кириленко В. В.¹, Гуменюк О. В.¹, Дубовик Н. С.² Реакція перспективних сортів пшениці озимої за урожайністю на умови вирощування. Зернові культури. 2022. 6 (2). 84–91.

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Актуальність. Незадовільне використання генетичного потенціалу сортів пшениці озимої є однією з багатьох причин, що спричиняють проблему в недоотриманні продовольчого зерна в Україні. Реалізація генетичного потенціалу сорту можлива за умови виконання всього комплексу агротехнологічних заходів і жорсткої технології вирощування насіння. Від попередників, строків сівби та погодних умов у період вегетації значною мірою залежить продуктивність різних за генотипом сортів. **Метою** наших досліджень було визначення потенціалу врожайності нових сортів пшениці озимої миронівської селекції залежно від попередників та строків сівби в умовах центрального Лісостепу України, а також встановлення взаємозалежності між ними. **Матеріали і методи.** Дослідження проведено у польовому досліді на полях Миронівського інституту пшениці імені В. М. Ремесла НААН (МІП) у 2018/19–2020/21 рр., (рік – чинник А (рік), що розташований у центральній частині Лісостепу України. Об'єктом досліджень були п'ять нових сортів пшениці озимої миронівської селекції (МІП Фортуна, МІП Лада, МІП Ювілейна, Аврора миронівська, МІП Лакомка) у порівнянні з стандартом Подолянка – чинник В. Досліди закладали після двох попередників соняшник, соя – чинник С; сівбу здійснювали 25 вересня та 5 жовтня з відхиленням 1–3 доби – чинник D. Рівень коефіцієнтів суттєвості відхилень температури повітря (°C) та суми опадів (мм) визначали за градацією згідно методики Педя Д. А. (1975) і Каленської С. М. (2018). **Результати.** Погодні умови в роки досліджень істотно різнились, що дало змогу об'єктивно оцінити матеріал. Досліджено врожайність нових сортів пшениці озимої миронівської селекції залежно від попередників та строків сівби. Серед досліджуваних попередників визначено найкращим соя, а строком сівби – 25 вересня, що у середньому за роки вивчення сприяло отриманню максимального рівня врожайності нових сортів культури. **Висновки.** За результатами дослідження сортових відмінностей визначено, що найбільшу врожайність у цілому по досліді сформував за першого строку сівби (25 вересня) сорт МІП Ювілейна (6,24 т/га), за двома строками сівби (25, вересня та 5 жовтня) вище значення урожайності спостерігали у сорту МІП Фортуна (5,46 та 5,47 т/га).

Ключові слова: пшениця озима, сорт, урожайність, погодні умови, попередник, строк сівби