**UDC 633.15:631.527:632.4**
**DOI https://doi.org/10.32782/2226-0099.2026.147.2.31**

# SCREENING OF COMMON MAIZE HYBRIDS FOR RESISTANCE TO MAJOR DISEASES

***Shyshkin B. M.*** *– Graduate student at the B. M. Litvinov Department of Zoology, Entomology, Phytopathology, Integrated protection and Quarantine of Plants, State Biotechnological University*
*orcid.org/0009-0002-8239-4244*

*The article presents a comprehensive analysis of common maize hybrids included in the State Register of Plant Varieties Approved for Dissemination in Ukraine as of 2025. The study focuses on modern domestic and foreign hybrids that constitute the core of the varietal resources of the crop and are widely used in agricultural production. The hybrids were systematized according to their response to major adverse environmental factors, particularly infection with stalk rot, common smut, and helminthosporiosis, as well as according to their potential yield under compliance with recommended maize cultivation technologies.*

*The results of the comparative analysis indicate that both domestic and foreign hybrids are generally characterized by similar levels of resistance to common smut. The maize varietal resources in Ukraine exhibit an overall increased level of resistance to this pathogen, which significantly reduces the risk of yield losses and contributes to the stability of crop production under diverse soil and climatic conditions. The predominance of hybrids with resistance scores of 7–8 points reflects notable breeding progress aimed at limiting the harmfulness of common smut. The obtained results confirm the expediency of the widespread use of hybrids with increased resistance to this disease as an important component of adaptive and resource-efficient maize cultivation technologies.*

*The analysis of registration data also showed that the vast majority of hybrids are characterized by medium to increased resistance to stalk rot. This reflects the breeding orientation toward the development of genotypes with strong stalk structure, capable of maintaining physiological activity during the second half of the growing season and reducing the risks of lodging and yield losses.*

*The examination of data from the State Register of Plant Varieties of Ukraine further indicates a high level of resistance of most hybrids to helminthosporiosis. This trend is the result of targeted breeding efforts aimed at prolonging the functional activity of the leaf apparatus. The most numerous group consists of hybrids with resistance scores of 7–8 points, which form the basis of the modern varietal resources and ensure a relatively stable phytosanitary status of crops under conditions of moderate infection pressure.*

***Key words:*** *maize, hybrid, disease, yield, resistance, common smut, stalk rot, helminthosporiosis.*

***Шишкін Б. М. Скринінг гібридів кукурудзи звичайної за стійкістю до основних хвороб***

*У статті здійснено комплексний аналіз гібридів кукурудзи звичайної, включених до Державного реєстру сортів рослин, придатних до поширення в Україні станом на 2025 рік. Об'єктом дослідження стали сучасні вітчизняні та іноземні гібриди, які становлять основу сортового ресурсу культури та широко використовуються у виробництві. Гібриди систематизовано за їх реакцією на основні негативні чинники навколишнього середовища, зокрема ураження стебловою гниллю, пухирчастою сажкою та гельмінтоспоріозом, а також за рівнем потенційної урожайності за умови дотримання рекомендованих елементів технології вирощування кукурудзи. Результати порівняльного аналізу засвідчили, що як вітчизняні, так і іноземні гібриди загалом характеризуються близьким рівнем стійкості до пухирчастої сажки. Сортовий ресурс кукурудзи в Україні вирізняється підвищеним загальним рівнем резистентності до цього патогена, що істотно знижує ризики* *втрат урожаю та сприяє стабільності виробництва культури в різних ґрунтово-кліматичних умовах. Переважання гібридів із бальною оцінкою стійкості 7–8 балів свідчить про помітний селекційний прогрес, спрямований на обмеження шкодочинності пухирчастої сажки. Отримані результати підтверджують доцільність широкого використання гібридів із підвищеною стійкістю до цього захворювання як важливого елементу адаптивних і ресурсозберігаючих технологій вирощування кукурудзи. Аналіз реєстраційних даних також показав, що переважна більшість гібридів характеризується середнім і підвищеним рівнем стійкості до стеблової гнилі. Це відображає селекційну орієнтацію на формування генотипів зі стійким стеблостоєм, здатних зберігати фізіологічну активність рослин у другій половині вегетації та забезпечувати зменшення ризиків вилягання і втрат урожаю. Дослідження даних Державного реєстру сортів рослин України свідчить і про високий рівень стійкості більшості гібридів до гельмінтоспоріозу. Така тенденція є результатом цілеспрямованої селекційної роботи, спрямованої на подовження функціональної активності листкового апарату. Найбільш чисельною залишається група гібридів із бальною оцінкою 7–8 балів, яка формує основу сучасного сортового ресурсу та забезпечує відносно стабільний фітосанітарний стан посівів за умов помірного інфекційного навантаження.*

***Ключові слова:*** *кукурудза, гібрид, хвороба, урожайність, стійкість, пухирчаста сажка, стеблова гниль, гельмінтоспоріоз.*

**Statement of the problem.** Under the soil and climatic conditions of the Western Forest-Steppe of Ukraine, the development and introduction of common maize hybrids resistant to major diseases is one of the priority challenges of modern crop production. Sufficient but unstable moisture supply, frequent temperature fluctuations, and prolonged periods of high air humidity during the second half of the growing season contribute to the formation of an increased infection background and intensive development of fungal diseases of maize. This has been repeatedly noted in domestic studies conducted in various soil and climatic zones of Ukraine, particularly in the Forest-Steppe zone [1, p. 95–100; 6, p. 271–278; 9, p. 174–178].

Among the complex of maize diseases, smut diseases occupy an important place, particularly common smut, which under favorable weather conditions can develop on a mass scale and cause significant yield losses. Field studies have shown that infection with common smut may affect a substantial proportion of plants, while the level of harmfulness varies considerably depending on hybrid characteristics, confirming the decisive role of genotype in limiting disease development [11, p. 150–159].

Helminthosporiosis of maize leaves is among the most widespread foliar diseases in the Forest-Steppe zone of Ukraine. Its development is accompanied by premature senescence of the assimilating surface, a reduction in the duration of the grain-filling period, and a decrease in yield. According to domestic research, the intensity of helminthosporiosis development increases significantly under conditions of prolonged leaf wetness and moderate temperatures, which are typical of the Western Forest-Steppe [7, p. 40–51; 8, 92–102; 10, p. 265–268].

Maize stalk rots, predominantly of fusarial etiology, are of a multifactorial nature in the region and are closely associated with abiotic stresses, particularly uneven soil moisture regimes. The development of these diseases leads not only to a reduction in grain weight but also to plant lodging and additional yield losses during harvesting, as confirmed by the results of experimental and production studies conducted under the conditions of the Forest-Steppe of Ukraine [2, p. 370–374; 4, p. 228–235; 5, p. 71–75].

Thus, under the conditions of the Western Forest-Steppe of Ukraine, the problem of insufficient systematized data on the resistance of modern maize hybrids to common smut, helminthosporiosis, and stalk rots, as well as on the relationship between disease severity and plant productivity, remains relevant. This substantiates the need for comprehensive phytopathological studies aimed at scientifically justifying criteria for the selection of maize hybrids suitable for stable cultivation under the agroecological conditions of the Western Forest-Steppe of Ukraine.

The quantitative nature of maize resistance to helminthosporiosis and stalk rots, as well as the strong dependence of disease expression on environmental conditions and plant genotype, is confirmed by numerous international studies [12, p. 462–469; 13, p. 779–784; 14, p. 463–474; 15, p. 705–713; 16, p. 315–322; 17, p. 459–464]. The authors note that the development of foliar and stalk diseases leads to reduced photosynthetic activity, disruption of assimilate transport, and yield losses, which is consistent with the results of domestic observations conducted in the Forest-Steppe zone of Ukraine.

**Materials and research methodology.** Materials from our own research, the state register of plant varieties suitable for distribution in Ukraine for 2025 [3], and the information and reference system "Varieties" analyzed and applied.

**Results and discussion.** The authors analyzed common maize hybrids included in the State Register of Plant Varieties Approved for Dissemination in Ukraine for 2025. The hybrids were grouped according to their response to adverse environmental factors, in particular common smut, helminthosporiosis, and stalk rot, as well as according to their potential yield under adherence to recommended maize cultivation technologies.

**Common smut of maize** (*Ustilago maydis* (DC.) Corda) is one of the most widespread and potentially harmful fungal diseases of the crop, affecting all aboveground plant organs, including leaves, stalks, ears, and tassels. Disease development is accompanied by the formation of characteristic gall-like swellings, which lead to yield reduction, deterioration of grain market quality, and complications during mechanical harvesting. Therefore, resistance of maize hybrids to common smut is an important component of their biotic adaptability and yield stability.

The analysis of registration data indicates that the vast majority of maize hybrids are characterized by medium to increased resistance to common smut, reflecting the general breeding trend toward reduced crop susceptibility to this pathogen. The most numerous group consists of hybrids rated at 7–8 points, which form the basis of the modern varietal resources and ensure a satisfactory phytosanitary condition of crops under moderate infection pressure.

Hybrids with high resistance (8–9 points) are represented in the Register in significant numbers. They are characterized by limited gall formation even under weather conditions favorable for pathogen development, which contributes to the preservation of the assimilating surface and reduction of yield losses. Such hybrids are particularly valuable for regions with unstable hydrothermal regimes, where sharp temperature fluctuations and mechanical plant damage increase the risk of infection.

Hybrids with a medium resistance level (6–7 points) are also widely represented. Under favorable growing conditions, they ensure satisfactory productivity; however, under intensive technologies or stress factors (hail, strong winds, pest damage), they may show increased susceptibility to the disease. The effectiveness of their cultivation largely depends on adherence to agronomic practices aimed at reducing infection pressure.

The share of hybrids with low resistance to common smut (≤ 5 points) is insignificant, indicating the gradual elimination of highly susceptible forms from the modern maize assortment. The presence of a limited number of such hybrids is usually due to their breeding value for other economically important traits or their use under specific agroecological conditions.

Comparative analysis shows that both domestic and foreign hybrids generally exhibit similar resistance levels to common smut. At the same time, foreign hybrids are somewhat more frequently represented in the group with maximum resistance scores, which may be related to more intensive use of resistance sources and orientation toward high-input production systems. Ukrainian hybrids, in turn, demonstrate sufficient resistance combined with high adaptability to local growing conditions.

Overall, the maize varietal resources in Ukraine are characterized by an increased level of resistance to common smut, which reduces the risk of significant yield losses and ensures production stability. The predominance of hybrids rated at 7–8 points indicates breeding progress toward enhanced resistance to this pathogen. The obtained results confirm the expediency of using hybrids with increased resistance to common smut as an important component of adaptive and resource-efficient maize cultivation technologies.

Correlation analysis between resistance to common smut and grain yield revealed a weak positive relationship ($r = 0{,}17$; $n = 435$), indicating only a minor linear dependence between the studied traits. This suggests that resistance to common smut is not a determining factor of productivity, and its influence on yield is mainly indirect.

This trait primarily performs a stabilizing and protective function, aimed at reducing yield losses caused by *Ustilago maydis*. Increased resistance limits gall development on vegetative and generative organs, contributes to the preservation of assimilating surface area, and maintains physiological activity of plants, but does not directly determine the realized yield potential.

The scatter plot (Fig. 1) clearly illustrates the absence of a pronounced linear relationship between resistance to common smut and yield. Yield variability is considerable within the same resistance scores, and high yield values are observed both among hybrids rated at 8 points and those with maximum resistance (9 points), confirming the auxiliary role of this trait in yield formation (Table 1).

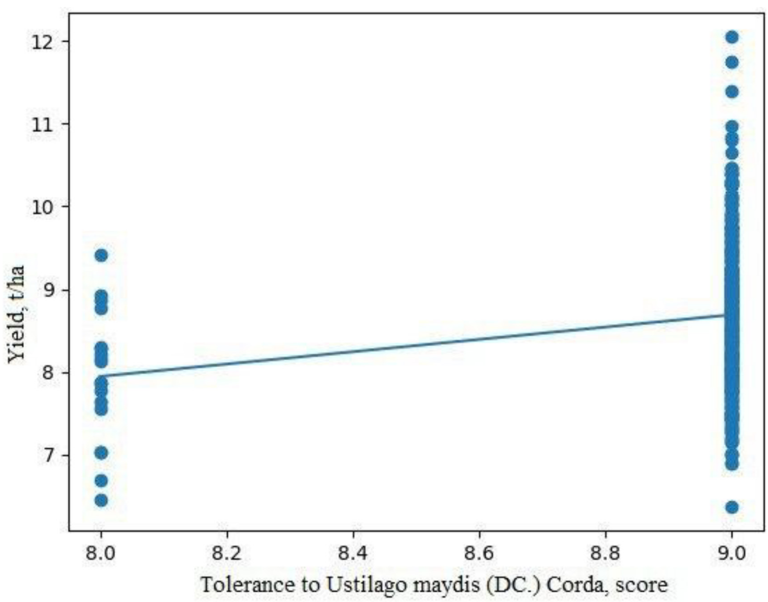


*Fig. 1. Relationship between resistance to common smut and grain yield of maize hybrids*

Table 1

**Main indicators of common maize hybrids**

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 1 | CS Luxuri | 7,96 | 8 | 9 | 9 |
| 2 | MAGAN | 8,75 | 9 | 9 | 9 |
| 3 | ABADAN | 9,20 | 8 | 9 | 9 |
| 4 | Абріса | 9,04 | 8 | 9 | 9 |
| 5 | AVALON | 7,79 | 9 | – | – |
| 6 | AGRAM | 8,75 | 8 | 9 | 9 |
| 7 | AGRO SANA | 8,09 | 9 | 9 | 9 |
| 8 | Adevey | 8,97 | 9 | – | – |
| 9 | АЕГ 270 | 8,30 | 8 | 9 | 8 |
| 10 | АЕГ 305 | 8,87 | 9 | 9 | 9 |
| 11 | АЕГ 340 | 7,69 | 9 | 9 | 9 |
| 12 | AJOWAN | 8,27 | 9 | – | – |
| 13 | AKANTO | 14,00 | 7 | – | 9 |
| 14 | ALANO | 8,92 | 8 | 9 | 9 |
| 15 | ALIBI | 9,91 | 9 | 9 | 9 |
| 16 | Albireo | 9,65 | 9 | – | – |
| 17 | Alpedro | 10,6 | 8 | – | 7 |
| 18 | Альт | 8,19 | 8 | 9 | 9 |
| 19 | AMAROLA | 6,89 | 9 | 9 | 9 |
| 20 | AMAROC | 7,73 | 9 | – | – |
| 21 | Амеліор | 9,61 | 9 | – | – |
| 22 | Amello | 9,20 | 8 | 9 | 8 |
| 23 | Андрес | 9,25 | 8 | 9 | 9 |
| 24 | Anovi CS | 9,05 | 9 | – | – |
| 25 | ANSERA | 8,42 | 8 | 9 | 9 |
| 26 | Apollon | 7,95 | 9 | – | – |
| 27 | Apriolo | 11,20 | 8 | – | 7 |
| 28 | AP 18101 K | 7,83 | 9 | 9 | 9 |
| 29 | AP 18102 K | 8,15 | 9 | 9 | 9 |
| 30 | Arabella | 7,18 | 9 | 9 | 9 |
| 31 | Ardash | 8,06 | 9,3 | – | – |
| 32 | Arcadio | 10,43 | 8 | 9 | 9 |
| 33 | Arlen | 9,31 | 8 | 9 | 9 |
| 34 | ARMILLA | 8,09 | 8 | 9 | 9 |
| 35 | Artenyo | 8,03 | 9 | – | – |
| 36 | Arturo | 7,29 | 9 | – | – |
| 37 | AS 240 | 8,76 | 9 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 38 | Askaniia | 7,82 | 9 | – | – |
| 39 | ASTON | 9,90 | 7 | – | 7 |
| 40 | Atlantico | 8,41 | 8 | 9 | 9 |
| 41 | Afina | 8,82 | 9 | – | – |
| 42 | AFK Hrouz | 8,94 | 9 | 9 | 9 |
| 43 | AFK Fresh | 8,74 | 9 | 9 | 9 |
| 44 | Ajaxx | 8,40 | 9 | – | – |
| 45 | B2190 | 8,80 | 9 | 9 | 9 |
| 46 | B3316C | 9,46 | 9 | 9 | 9 |
| 47 | Bayrossa | 7,75 | 9 | 9 | 9 |
| 48 | BEANIA | 7,96 | 9 | – | – |
| 49 | BELTRAN | 8,75 | 9 | 9 | 8 |
| 50 | BERCANO | 9,23 | 9 | 9 | 9 |
| 51 | BIGBEAT | 8,38 | 9 | 9 | 9 |
| 52 | Bismark | 14,3 | 7 | – | 7 |
| 53 | BJORK | 7,10 | 9 | – | – |
| 54 | Bleid | 8,72 | 8 | 9 | 9 |
| 55 | BLANDEEN | 10,5 | 8 | – | 7 |
| 56 | Bone | 7,88 | 8 | 9 | 9 |
| 57 | BRV1586D | 7,30 | 9 | 9 | 9 |
| 58 | BRV2192A | 7,47 | 8 | 9 | 9 |
| 59 | BRV2230B | 7,50 | 9 | 9 | 9 |
| 60 | BRV2604D | 7,61 | 8 | 9 | 9 |
| 61 | BOURBON | 8,18 | 9 | 9 | 9 |
| 62 | Bts 282 | 8,99 | 9 | – | – |
| 63 | BC323 | 8,52 | 9 | 9 | 9 |
| 64 | BC415 | 12,00 | 7 | – | 7 |
| 65 | Valeta | 7,27 | 9 | 9 | 9 |
| 66 | VASARI | 8,55 | 9 | 9 | 9 |
| 67 | VASILI | 7,87 | 9 | – | – |
| 68 | Veber | 7,48 | 9 | 9 | 9 |
| 69 | VERDON | 9,79 | 9 | – | – |
| 70 | Visible | 7,44 | 9 | 9 | 9 |
| 71 | Winxx | 9,14 | 9 | – | – |
| 72 | Vira | 9,35 | 9 | 9 | 9 |
| 73 | G3615 | 8,99 | 9 | – | – |
| 74 | G4009 | 10,30 | 9 | – | – |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 75 | Heliodor | 9,69 | 9 | 9 | 8 |
| 76 | Gerdine | 8,74 | 9 | 9 | 9 |
| 77 | Hermes | 8,05 | 9 | 9 | 9 |
| 78 | Hileia | 9,62 | 9 | – | – |
| 79 | GUILLERMO | 9,20 | 8 | 9 | 9 |
| 80 | GK 288 | 7,69 | 9 | – | – |
| 81 | GKT 211 | 6,82 | 9 | – | – |
| 82 | GKT 250 | 7,27 | 9 | – | – |
| 83 | GKT3213 | 7,44 | 9 | 9 | 9 |
| 84 | GLORIETT | 8,04 | 9 | 9 | 9 |
| 85 | Glutexo | 8,20 | 8 | 9 | 9 |
| 86 | Hold 320 | 8,76 | 9 | 9 | 9 |
| 87 | Holosiivs`kyi 260 SV | 9,17 | 9 | – | – |
| 88 | Holosiivskyi Novyi | 8,85 | 9 | 9 | 9 |
| 89 | GOCHEE | 7,78 | 8 | 9 | 9 |
| 90 | Grigri CS | 10,32 | 9 | 9 | 8 |
| 91 | GS 210 | 7,76 | 9 | – | – |
| 92 | GS 240 | 7,58 | 9 | – | – |
| 93 | GS 330 | 8,50 | 9 | – | – |
| 94 | GS 370 | 8,73 | 9 | – | – |
| 95 | GW0739 | 9,52 | 9 | – | 8 |
| 96 | GW1083 | 12,50 | 8 | – | 8 |
| 97 | GW2042 | 8,20 | 8 | – | 8 |
| 98 | GW2063 | 9,10 | 8 | – | 9 |
| 99 | GW2122 | 7,27 | 9 | – | – |
| 100 | GW3378 | 11,67 | 9 | – | 9 |
| 101 | GW3808 | 8,26 | 9 | – | – |
| 102 | GW8361 | 9,80 | 9 | – | 8 |
| 103 | GW9003 | 8,25 | 9 | – | – |
| 104 | Damir | 7,21 | 9 | 9 | 8 |
| 105 | DANIIL | 8,72 | 9 | – | – |
| 106 | Danubio | 8,67 | 9 | – | – |
| 107 | DB Varta | 9,62 | 9 | 9 | 9 |
| 108 | DB Lada | 6,65 | 9 | – | – |
| 109 | DB Tyras | 7,03 | 8 | 8 | 9 |
| 110 | DB Khotyn | 8,77 | 9 | – | – |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 111 | Debiut | 8,92 | 9 | 9 | 9 |
| 112 | Devis | 8,00 | 9 | 9 | 9 |
| 113 | Digital | 14,10 | 8 | – | 7 |
| 114 | DKC3400 | 7,67 | 8 | 9 | 9 |
| 115 | DKC3402 | 8,51 | 8 | 9 | 9 |
| 116 | DKC3595 | 9,40 | 9 | 9 | 8 |
| 117 | DKC3609 | 9,55 | 9 | 9 | 8 |
| 118 | DKC3710 | 8,74 | 8 | 9 | 9 |
| 119 | DKC3730 | 8,35 | 9 | – | – |
| 120 | DKC3787 | 8,54 | 9 | – | – |
| 121 | DKC3788 | 9,34 | 9 | – | – |
| 122 | DKC3796 | 8,87 | 9 | 9 | 8 |
| 123 | DKC3805 | 8,51 | 8 | 9 | 9 |
| 124 | DKC3888 | 9,63 | 9 | – | – |
| 125 | DKC3939 | 8,03 | 9 | – | – |
| 126 | DKC3969 | 8,67 | 9 | – | – |
| 127 | DKC4014 | 8,91 | 9 | – | – |
| 128 | DKC4098 | 9,46 | 9 | 9 | 9 |
| 129 | DKC4109 | 9,85 | 8 | 9 | 9 |
| 130 | DKC4178 | 9,47 | 9 | – | – |
| 131 | DKC4351 | 7,98 | 9 | – | – |
| 132 | DKC4391 | 8,46 | 9 | 9 | 9 |
| 133 | DKC4541 | 7,78 | 9 | – | – |
| 134 | DKC4598 | 9,58 | 9 | 9 | 9 |
| 135 | DKC4709 | 8,92 | 8 | 9 | 9 |
| 136 | DKC4726 | 9,74 | 8 | 9 | 9 |
| 137 | DKC4897 | 10,81 | 9 | 9 | 9 |
| 138 | DKC4908 | 8,97 | 8 | 9 | 9 |
| 139 | DKC5075 | 11,87 | 9 | – | – |
| 140 | DKC5092 | 9,48 | 9 | 9 | 9 |
| 141 | DKC5182 | 10,28 | 9 | 9 | 9 |
| 142 | DKC5206 | 8,58 | 8 | 9 | 9 |
| 143 | DM Dominanta | 9,00 | 9 | 9 | 9 |
| 144 | DM Liberti | 8,72 | 9 | – | – |
| 145 | DMS 2510 | 8,78 | 9 | – | – |
| 146 | DMS 2715 | 7,70 | 9 | – | – |
| 147 | DMS 3015 | 8,56 | 9 | – | – |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 148 | DMS 3111 | 7,56 | 9 | – | – |
| 149 | DMS 3510 | 9,06 | 9 | – | – |
| 150 | DMS Alians | 7,14 | 9 | 9 | 9 |
| 151 | DMS Aliur | 7,27 | 9 | 9 | 9 |
| 152 | DMS Amiho | 8,22 | 8 | 9 | 9 |
| 153 | DMS Bliuz | 8,15 | 9 | – | – |
| 154 | DMS Bonus | 7,84 | 9 | 9 | 8 |
| 155 | DMS Halant | 7,96 | 9 | 9 | 9 |
| 156 | DMS Hildiia | 8,13 | 8 | 9 | 9 |
| 157 | DMS Honor | 8,99 | 8 | 9 | 9 |
| 158 | DMS Hrono | 8,38 | 9 | – | – |
| 159 | DMS Domen | 7,94 | 8 | 9 | 9 |
| 160 | DMS Efes | 7,95 | 9 | 9 | 9 |
| 161 | DMS Kairat | 7,86 | 8 | 9 | 9 |
| 162 | DMS Kesh | 7,74 | 8 | 9 | 9 |
| 163 | DMS Koryfei | 8,86 | 9 | 9 | 9 |
| 164 | DMS Kortes | 8,16 | 9 | 9 | 9 |
| 165 | DMS Krok | 8,95 | 9 | 9 | 9 |
| 166 | DMS Kush | 7,48 | 8 | 9 | 9 |
| 167 | DMS Medeu | 8,92 | 9 | 9 | 9 |
| 168 | DMS Orion | 8,53 | 9 | – | – |
| 169 | DMS Orlan | 8,53 | 8 | 9 | 9 |
| 170 | DMS Orfei | 9,96 | 8 | 9 | 9 |
| 171 | DMS Praim | 6,95 | 9 | – | – |
| 172 | DMS Sapfir | 8,57 | 8 | 9 | 9 |
| 173 | DMS Sektor | 9,01 | 9 | – | – |
| 174 | DMS Taller | 8,50 | 8 | 9 | 9 |
| 175 | DMS Tarhet | 8,22 | 8 | 8 | 9 |
| 176 | DMS Tonus | 8,43 | 9 | 9 | |
| 177 | DMS Trafik | 7,55 | 9 | 9 | 8 |
| 178 | DMS Traian | 8,01 | 9 | 9 | 9 |
| 179 | DMS Trend | 8,21 | 9 | – | – |
| 180 | DMS Triod | 8,29 | 8 | 9 | 9 |
| 181 | DMS Tristan | 8,3 | 9 | 9 | 9 |
| 182 | DMS Triumf | 7,33 | 9 | 9 | 9 |
| 183 | DMS Tiudor | 8,18 | 9 | 9 | 9 |
| 184 | DMS Forsazh | 8,94 | 8 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 185 | DMS Khammer | 9,50 | 9 | 9 | 8 |
| 186 | DMS Unity | 7,50 | 8 | 9 | 9 |
| 187 | DN Akym | 8,70 | 9 | 9 | 9 |
| 188 | DN Astra | 8,58 | 9 | – | – |
| 189 | DN Atlant | 7,77 | 8 | 9 | 9 |
| 190 | DN Bucha | 8,66 | 9 | 9 | 9 |
| 191 | DN Veld | 8,05 | 9 | 9 | 9 |
| 192 | DN Vidrada | 8,45 | 9 | – | – |
| 193 | DN Halateia | 8,52 | 9 | – | – |
| 194 | DN Drah | 9,43 | 9 | 9 | 8 |
| 195 | DN Zoriana | 7,40 | 9 | – | – |
| 196 | DN Kyiakhy | 6,45 | 8 | 8 | 9 |
| 197 | DN Korund | 8,14 | 9 | – | – |
| 198 | DN Ksena | 8,59 | 7 | 9 | 9 |
| 199 | DN Meotyda | 7,90 | 9 | – | – |
| 200 | DN Nazar | 8,66 | 9 | – | – |
| 201 | DN Nur | 7,99 | 9 | – | – |
| 202 | DN Pyvykha | 8,78 | 9 | – | – |
| 203 | DN Pulsatsiia | 7,46 | 9 | 9 | 9 |
| 204 | DN Rubin | 9,19 | 9 | – | – |
| 205 | DN Sarmat | 8,44 | 8 | – | – |
| 206 | DN Synevyr | 7,05 | 9 | – | – |
| 207 | DN Slavytsia | 7,26 | 9 | – | – |
| 208 | DN Straid | 9,33 | 9 | 9 | 8 |
| 209 | DN Fiiesta | 7,83 | 9 | – | – |
| 210 | DN Khortytsia | 7,97 | 9 | – | – |
| 211 | Dolia | 8,81 | 9 | – | – |
| 212 | DONERIXX | 9,24 | 9 | 9 | 9 |
| 213 | Dorlen | 8,86 | 9 | 9 | 9 |
| 214 | Dostatok 300 MV | 8,23 | 9 | – | – |
| 215 | EXXCLAM | 7,80 | 9 | – | – |
| 216 | EXXCLUSIV | 8,48 | 9 | – | – |
| 217 | Eclatant | 8,57 | 9 | – | – |
| 218 | Elmor | 9,05 | 9 | 9 | 9 |
| 219 | ELDACAR | 9,58 | 9 | 9 | 9 |
| 220 | Elsanto | 10,39 | 8 | 9 | 9 |
| 221 | Emiliia | 7,42 | 9 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 222 | Erekorn | 9,46 | 9 | 9 | 9 |
| 223 | Erest | 8,71 | 9 | 9 | 9 |
| 224 | ES ASTEROID | 7,56 | 9 | – | – |
| 225 | EC Gisella | 13,8 | 7 | – | 7 |
| 226 | ES Ikar | 8,34 | 9 | 9 | 9 |
| 227 | ES Inventive | 7,95 | 9 | – | – |
| 228 | ES KATAMARAN | 8,25 | 9 | 9 | 9 |
| 229 | ES KATMANDU | 9,15 | 8 | 9 | 9 |
| 230 | ES CONCORD | 8,09 | 9 | – | – |
| 231 | ES Constellation | 8,55 | 9 | – | – |
| 232 | ES CREATIVE | 8,43 | 9 | – | – |
| 233 | ES CROSSMAN | 8,07 | 9 | – | – |
| 234 | ES METHOD | 8,51 | 9 | – | – |
| 235 | ES METRONOM | 8,35 | 9 | – | – |
| 236 | ES MYLADY | 9,76 | 9 | 9 | 9 |
| 237 | EC MOCKITO | 8,87 | 9 | – | – |
| 238 | ES PERSPECTIVE | 8,89 | 9 | 9 | 9 |
| 239 | ES RUNWAY | 8,77 | 9 | 9 | 9 |
| 240 | ES SUBMARINE | 8,65 | 9 | 9 | 9 |
| 241 | ES TRAVELER | 7,94 | 9 | 9 | 9 |
| 242 | ES Faraday | 8,13 | 9 | – | – |
| 243 | ES Fieldgold | 8,05 | 9 | 9 | 9 |
| 244 | ES HEMINGWAY | 9,94 | 9 | – | – |
| 245 | ES HATTRICK | 9,05 | 8 | 9 | 8 |
| 246 | ES HORNET | 9,57 | 9 | – | – |
| 247 | ES IUnkai | 8,23 | 9 | 9 | 9 |
| 248 | ES YAKARI | 8,74 | 9 | 9 | 8 |
| 249 | ESTETIX | 10,29 | 9 | 9 | 8 |
| 250 | Estilla | 9,13 | 9 | 9 | 8 |
| 251 | ASHLEY | 10,43 | 7 | – | 7 |
| 252 | Euroboss | 8,02 | 9 | 9 | 9 |
| 253 | Jakleen | 9,52 | 9 | 9 | 8 |
| 254 | Zdvyzh MV | 7,65 | 9 | – | – |
| 255 | Zedan 26 | 7,78 | 9 | 9 | 9 |
| 256 | Zedan 28 | 8,61 | 8 | 9 | 9 |
| 257 | Zedan 32 | 8,49 | 8 | 9 | 9 |
| 258 | ZETA 140S | 6,73 | 9 | – | – |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 259 | Zorianyi | 7,37 | 9 | – | – |
| 260 | ZP 161 | 7,77 | 9 | 9 | 9 |
| 261 | ZP 188 | 8,69 | 8 | 9 | 9 |
| 262 | ZP 222 | 8,33 | 8 | 9 | 9 |
| 263 | ZP 278 | 8,75 | 9 | – | – |
| 264 | ZP 299 | 9,67 | 9 | – | – |
| 265 | ZP 333 | 8,25 | 9 | – | – |
| 266 | ZP 4123 | 9,24 | 9 | 9 | 9 |
| 267 | ZPSC 366 | 9,76 | 9 | 9 | 8 |
| 268 | ZPSC 388 | 10,46 | 9 | 9 | 8 |
| 269 | Surround | 9,16 | 9 | – | – |
| 270 | Ivetta | 7,29 | 9 | 9 | 9 |
| 271 | Ihoriv 290 SV | 7,81 | 9 | – | – |
| 272 | Inhulets | 7,98 | 9 | 9 | 9 |
| 273 | Inhul`s`kyi | 7,74 | 9 | – | – |
| 274 | INICI | 9,86 | 9 | 9 | 8 |
| 275 | Inclusiv | 10,64 | 9 | – | – |
| 276 | INTERAKTIS | 9,45 | 8 | 9 | 9 |
| 277 | INTERSTELLAR | 9,05 | 9 | 9 | 8 |
| 278 | Isida | 8,29 | 9 | – | – |
| 279 | ISH407 | 8,69 | 8 | 9 | 9 |
| 280 | Karbon | 7,44 | 8 | 9 | 9 |
| 281 | KARIBIKO | 8,03 | 9 | 9 | 9 |
| 282 | Karifols | 2,20 | 9 | – | – |
| 283 | KARPATIS | 8,23 | 9 | – | – |
| 284 | Casandro | 9,87 | 9 | – | – |
| 285 | Kvoter | 7,87 | 8 | 9 | 9 |
| 286 | KWS 2370 | 8,59 | 9 | – | – |
| 287 | KVS 381 | 9,08 | 9 | – | – |
| 288 | KWS 4484 | 9,54 | 9 | – | – |
| 289 | KWS ADNANO | 9,78 | 9 | 9 | 9 |
| 290 | KWS ACADO | 8,67 | 9 | 9 | 9 |
| 291 | KWS AKUSTIKA | 10,03 | 9 | 9 | 8 |
| 292 | KWS ALLEGRO | 8,14 | 9 | 9 | 8 |
| 293 | KWS AMATRIO | 8,91 | 9 | 9 | 9 |
| 294 | KWS ARTESIO | 14,00 | 9 | – | 9 |
| 295 | KWS ARTURELLO | 7,98 | 9 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 296 | KWS BAVARIO | 8,16 | 9 | 9 | 9 |
| 297 | KWS BOLIVIANO | 9,17 | 9 | 9 | 9 |
| 298 | KWS VOLTARIO | 8,51 | 8 | 9 | 9 |
| 299 | KWS GALILEO | 9,59 | 9 | 9 | 9 |
| 300 | KWS HYPOLITO | 9,73 | 8 | 9 | 9 |
| 301 | KWS DENERIO | 7,84 | 9 | 9 | 9 |
| 302 | KWS JAIPUR | 8,50 | 9 | 9 | 8 |
| 303 | KWS DONJUAN | 8,77 | 8 | 9 | 9 |
| 304 | KWS EDITIO | 7,55 | 8 | 8 | 9 |
| 305 | KWS EMPORIO | 7,64 | 9 | 8 | 9 |
| 306 | KWS ERNESTO | 8,38 | 9 | 9 | 9 |
| 307 | KWS ESTRELLO | 9,08 | 9 | 9 | 9 |
| 308 | KWS INTELIGENS | 10,38 | 9 | 9 | 9 |
| 309 | KWS KAVALIER | 7,82 | 9 | – | – |
| 310 | KWS CANTO | 8,44 | 9 | 9 | 9 |
| 311 | KWS KASHADO | 9,47 | 9 | 9 | 9 |
| 312 | KWS KASHMIR | 10,11 | 9 | 9 | 8 |
| 313 | KWS CORNELIO | 8,38 | 9 | 9 | 9 |
| 314 | KWS KUMPAN | 8,77 | 9 | – | – |
| 315 | KWS LAURO | 8,34 | 9 | 9 | 9 |
| 316 | KWS LUSITANO | 9,09 | 9 | 9 | 9 |
| 317 | KWS MARCOPOLO | 7,00 | 8 | 9 | 9 |
| 318 | KWS MAURILIO | 9,09 | 9 | 9 | 9 |
| 319 | KWS MILEKANO | 7,89 | 8 | 9 | 9 |
| 320 | KWS MONUMENTO | 8,16 | 9 | 8 | 9 |
| 321 | KWS NEVO | 7,00 | 9 | 9 | 9 |
| 322 | KWS NIRVANO | 7,75 | 9 | 9 | 9 |
| 323 | KWS OLTENIO | 9,64 | 8 | 9 | 9 |
| 324 | KWS RABATO | 7,83 | 9 | 9 | 9 |
| 325 | KWS RICARDO | 9,27 | 9 | 9 | 8 |
| 326 | KWS TASKO | 7,66 | 8 | 9 | 9 |
| 327 | KWS FERNANDO | 9,00 | 9 | 9 | 9 |
| 328 | KWS FORTURIO | 10,32 | 9 | 9 | 9 |
| 329 | KD 39 | 7,92 | 8 | 9 | 9 |
| 330 | KD 75 | 8,34 | 7 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 331 | KELTIKUS | 7,92 | 9 | – | – |
| 332 | Kerala | 9,11 | 9 | 9 | 9 |
| 333 | Kerberos | 7,88 | 9 | – | – |
| 334 | Kyivskyi 197 | 8,78 | 9 | 9 | 9 |
| 335 | CODEXA | 6,89 | 9 | – | – |
| 336 | KOLEKTOR | 9,25 | 9 | 9 | 9 |
| 337 | Contento | 8,98 | 8 | 9 | 9 |
| 338 | Korynt | 7,88 | 9 | – | – |
| 339 | Korpo | 8,88 | 8 | 9 | 9 |
| 340 | Cosmino | 8,46 | 9 | – | – |
| 341 | KRAKEN | 9,50 | 7 | – | 9 |
| 342 | Kremin` 200 SV | 7,80 | 8 | – | – |
| 343 | Krios | 8,14 | 9 | – | – |
| 344 | Krosbi | 7,45 | 9 | 9 | 9 |
| 345 | KS85XP | 7,46 | 9 | 9 | 9 |
| 346 | KS89KhR | 9,36 | 9 | 9 | 9 |
| 347 | KS94XP | 8,83 | 9 | 9 | 9 |
| 348 | KS95XP | 9,23 | 8 | 9 | 8 |
| 349 | KS99XP | 7,76 | 9 | 9 | 9 |
| 350 | LAZULIA | 7,45 | 9 | – | – |
| 351 | Lamasan | 8,93 | 8 | 9 | 8 |
| 352 | LG30002 | 8,00 | 9 | 9 | 9 |
| 353 | LG30179 | 7,94 | 9 | – | – |
| 354 | LG30189 | 7,80 | 9 | – | – |
| 355 | LG30215 | 7,90 | 9 | – | – |
| 356 | LG30254 | 7,99 | 9 | – | – |
| 357 | LG30258 | 10,33 | 7 | – | 7 |
| 358 | LG30267 | 9,00 | 9 | – | – |
| 359 | LG30273 | 8,10 | 9 | – | – |
| 360 | LG30308 | 8,80 | 9 | – | – |
| 361 | LG30315 | 8,31 | 9 | – | – |
| 362 | LG30352 | 8,24 | 9 | – | – |
| 363 | LG31217 | 10,31 | 7 | – | 7 |
| 364 | LG31233 | 8,21 | 9 | – | – |
| 365 | LG31238 | 10,47 | 8 | – | 7 |
| 366 | LG31240 | 7,03 | 8 | 8 | 9 |
| 367 | LG31245 | 10,70 | 8 | – | 7 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 368 | LG31256 | 9,32 | 9 | – | – |
| 369 | LG31261 | 8,75 | 8 | 9 | 9 |
| 370 | LG31272 | 10,28 | 8 | 9 | 8 |
| 371 | LG31276 | 10,24 | 7 | – | 8 |
| 372 | LG31284 | 9,04 | 9 | 9 | 9 |
| 373 | LG31305 | 8,80 | 9 | 9 | 9 |
| 374 | LG31331 | 10,50 | 7 | – | 7 |
| 375 | LG31332 | 7,59 | 8 | 9 | 9 |
| 376 | LG31350 | 7,69 | 9 | 9 | 9 |
| 377 | LG31365 | 8,96 | 9 | 9 | 8 |
| 378 | LG31377 | 9,57 | 9 | – | – |
| 379 | LG31380 | 8,92 | 8 | 9 | 9 |
| 380 | LG31383 | 8,64 | 8 | 9 | 9 |
| 381 | LG31388 | 9,11 | 9 | 9 | 8 |
| 382 | LG31390 | 8,20 | 9 | 9 | 9 |
| 383 | LG31459 | 8,94 | 7 | 9 | 9 |
| 384 | LG31479 | 9,02 | 9 | 9 | 9 |
| 385 | LG32257 | 7,36 | 9 | 9 | 9 |
| 386 | Lebron | 7,81 | 7 | 9 | 9 |
| 387 | Leonido | 8,92 | 9 | 9 | 9 |
| 388 | LESNO | 8,67 | 9 | 9 | 9 |
| 389 | LZM272/10 | 8,69 | 9 | 9 | 9 |
| 390 | LIAMO | 8,01 | 9 | 9 | 8 |
| 391 | Ligato | 10,8 | 8 | – | 8 |
| 392 | LID3130C | 10,25 | 8 | 9 | 9 |
| 393 | LID3306C | 9,12 | 8 | 9 | 9 |
| 394 | Lisaveta | 7,01 | 9 | 9 | 9 |
| 395 | Lokus | 7,78 | 8 | 9 | 9 |
| 396 | Lorens | 8,44 | 9 | 9 | 9 |
| 397 | LUXIMO | 8,73 | 9 | 9 | 9 |
| 398 | Magnato | 11,5 | 8 | – | 8 |
| 399 | MAJARE | 8,88 | 9 | – | – |
| 400 | MAJONG | 7,63 | 9 | – | – |
| 401 | MADIVO | 7,79 | 9 | – | – |
| 402 | MADLEN | 7,15 | 9 | – | – |
| 403 | Mazhor | 8,40 | 9 | 9 | 9 |
| 404 | MYWAY | 8,69 | 9 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 405 | MAKEDO | 8,00 | 9 | – | – |
| 406 | MANIFIK | 8,07 | 9 | – | – |
| 407 | Marsel` | 7,87 | 9 | – | – |
| 408 | MAS 10A | 7,51 | 9 | – | – |
| 409 | MAS 14G | 7,31 | 9 | – | – |
| 410 | MAS 15T | 8,37 | 9 | – | – |
| 411 | MAS 16B | 8,48 | 9 | 9 | 9 |
| 412 | MAS 20A | 8,12 | 9 | – | – |
| 413 | MAS 24C | 8,00 | 9 | – | – |
| 414 | MAS 250F | 8,19 | 8 | 9 | 9 |
| 415 | MAS 25F | 9,09 | 9 | – | – |
| 416 | MAS 26K | 8,66 | 9 | – | – |
| 417 | MAS 282K | 8,97 | 9 | 9 | 9 |
| 418 | MAS 28A | 7,69 | 9 | – | – |
| 419 | MAS 300B | 9,15 | 8 | 9 | 9 |
| 420 | MAS 333T | 8,56 | 9 | 9 | 9 |
| 421 | MAS 34B | 9,43 | 8 | 9 | 8 |
| 422 | MAS 357M | 8,29 | 8 | 8 | 9 |
| 423 | MAS 35K | 8,25 | 9 | – | – |
| 424 | MAS 36A | 8,30 | 9 | – | – |
| 425 | MAS 371D | 8,04 | 9 | 9 | 9 |
| 426 | MAS 37C | 8,06 | 9 | – | – |
| 427 | MAS 387L | 9,50 | 8 | – | 7 |
| 428 | MAS 39WX | 7,87 | 9 | – | – |
| 429 | MAS 400D | 9,40 | 8 | – | 9 |
| 430 | MAS 431B | 8,24 | 8 | 9 | 9 |
| 431 | MAS 440D | 8,46 | 8 | 9 | 9 |
| 432 | MAS 47P | 8,07 | 9 | – | – |
| 433 | MAS 48L | 11,4 | 8 | 9 | 8 |
| 434 | MAS220V | 9,90 | 9 | 9 | 8 |
| 435 | Matteo | 7,81 | 9 | – | – |
| 436 | MAFATE | 9,88 | 9 | – | – |
| 437 | MEGHAN | 7,92 | 9 | – | – |
| 438 | Mayflower | 10,46 | 9 | 9 | 8 |
| 439 | Melodiia | 7,57 | 9 | 9 | 9 |
| 440 | Matthew | 9,51 | 8 | 9 | 8 |
| 441 | Mirissa | 7,99 | 9 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 442 | MITODOS | 8,85 | 9 | 9 | 9 |
| 443 | Monblan | 9,57 | 9 | – | – |
| 444 | MONSENOR | 9,58 | 9 | – | – |
| 445 | MONSERA | 9,40 | 9 | 9 | 9 |
| 446 | MONSTER | 10,15 | 9 | 9 | 9 |
| 447 | MOJITO | 8,14 | 9 | 9 | 8 |
| 448 | MUASON | 7,04 | 9 | – | – |
| 449 | Naomi CS | 9,23 | 9 | 9 | 8 |
| 450 | NARGILO | 7,50 | 8 | 9 | 9 |
| 451 | NATAELO | 8,17 | 9 | 9 | 9 |
| 452 | Nertus 183 SV | 8,43 | 9 | – | – |
| 453 | Nertus 271 MV | 8,85 | 9 | – | – |
| 454 | Nikita | 9,09 | 9 | – | – |
| 455 | NIKOLLAGE | 9,20 | 8 | 9 | 9 |
| 456 | Noks | 7,88 | 9 | 9 | 9 |
| 457 | Norico | 7,95 | 9 | – | – |
| 458 | NR 250 MV | 9,20 | 8 | 9 | 9 |
| 459 | NR 350 MV | 8,63 | 8 | 9 | 9 |
| 460 | Oleshkivs`kyi | 8,43 | 9 | 9 | 9 |
| 461 | Onio | 8,13 | 7 | 8 | 9 |
| 462 | Orzhytsia 237 MV | 8,78 | 9 | – | – |
| 463 | P0200 | 9,73 | 9 | 9 | 9 |
| 464 | P0217 | 8,99 | 9 | 9 | 9 |
| 465 | P0268 | 12,06 | 9 | 9 | 9 |
| 466 | P0312 | 9,59 | 9 | 9 | 9 |
| 467 | P0349 | 11,76 | 9 | 9 | 9 |
| 468 | P0362 | 10,40 | 9 | 9 | 8 |
| 469 | P0710 | 9,65 | 8 | 9 | 9 |
| 470 | P0900 | 9,10 | 8 | 9 | 9 |
| 471 | P0937 | 8,98 | 9 | 9 | 9 |
| 472 | P7034 | 12,00 | 7 | – | 9 |
| 473 | P7043 | 7,59 | 9 | – | – |
| 474 | P7404 | 7,15 | 9 | 9 | 9 |
| 475 | P7515 | 8,02 | 8 | 9 | 9 |
| 476 | P7818 | 14,00 | 7 | – | 9 |
| 477 | P7948 | 7,63 | 9 | 9 | 9 |
| 478 | P8222 | 7,49 | 9 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 479 | P8240 | 8,83 | 8 | 9 | 9 |
| 480 | P8255 | 8,92 | 9 | 8 | 9 |
| 481 | P8271 | 7,64 | 9 | 9 | 9 |
| 482 | P8307 | 7,57 | 9 | – | – |
| 483 | P8358 | 9,55 | 9 | 9 | 9 |
| 484 | P8409 | 8,77 | 9 | – | – |
| 485 | P8521 | 7,30 | 9 | – | – |
| 486 | P8532 | 7,85 | 8 | 8 | 9 |
| 487 | P8556 | 9,27 | 8 | 9 | 9 |
| 488 | P8567 | 7,72 | 9 | – | – |
| 489 | P8604 | 8,27 | 8 | 9 | 9 |
| 490 | P8666 | 8,22 | 8 | 9 | 9 |
| 491 | P8683 | 8,24 | 9 | 9 | 9 |
| 492 | P8723 | 8,85 | 9 | – | – |
| 493 | P8752 | 7,93 | 9 | 9 | 9 |
| 494 | P8754 | 8,43 | 9 | 9 | 9 |
| 495 | P8782 | 8,32 | 9 | 9 | 9 |
| 496 | P8812 | 9,48 | 9 | – | – |
| 497 | P8816 | 7,93 | 9 | – | – |
| 498 | P8834 | 9,74 | 8 | 9 | 8 |
| 499 | P88844 | 8,23 | 9 | 9 | 9 |
| 500 | P8904 | 8,54 | 8 | 9 | 9 |
| 501 | P9042 | 8,37 | 9 | 9 | 9 |
| 502 | P9071 | 9,35 | 8 | 9 | 8 |
| 503 | P9074 | 8,93 | 9 | – | – |
| 504 | P9127 | 8,67 | 9 | – | – |
| 505 | P9170 | 9,03 | 8 | 9 | 8 |
| 506 | P9234 | 9,83 | 9 | – | – |
| 507 | P9241 | 7,88 | 9 | – | – |
| 508 | P9255 | 14,00 | 7 | – | 9 |
| 509 | P9300 | 8,01 | 8 | 9 | 9 |
| 510 | P9361 | 9,66 | 8 | 9 | 8 |
| 511 | P9415 | 9,15 | 9 | – | – |
| 512 | P9486 | 9,01 | 9 | – | – |
| 513 | P9537 | 10,27 | 9 | 9 | 8 |
| 514 | P9590 | 7,66 | 8 | 9 | 9 |
| 515 | P9610 | 8,70 | 8 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 516 | P9757 | 7,56 | 9 | 9 | 9 |
| 517 | P9874 | 9,56 | 9 | 9 | 9 |
| 518 | P9889 | 8,43 | 9 | 9 | 9 |
| 519 | P9960 | 8,19 | 8 | 9 | 9 |
| 520 | P9978 | 10,07 | 9 | 9 | 9 |
| 521 | P9985 | 7,70 | 8 | 9 | 9 |
| 522 | Powerpack | 8,54 | 9 | – | – |
| 523 | PAKITO | 10,50 | 7 | – | 8 |
| 524 | PANON | 8,83 | 8 | 9 | 9 |
| 525 | PESANTO | 7,42 | 9 | 9 | 9 |
| 526 | Piaff | 9,83 | 9 | 9 | 9 |
| 527 | PL 472 | 8,04 | 9 | 9 | 9 |
| 528 | Pleven | 8,04 | 9 | – | – |
| 529 | POESI CS | 9,02 | 8 | 9 | 8 |
| 530 | PR37N01 | 8,69 | 9 | – | – |
| 531 | Privat | 13,6 | 7 | – | 8 |
| 532 | PROPULSE | 8,99 | 8 | 9 | 8 |
| 533 | Pumori | 8,69 | 9 | 9 | 9 |
| 534 | Pustovarivs`kyi 280 SV | 8,87 | 9 | – | – |
| 535 | PIATOV | 9,23 | 9 | – | – |
| 536 | RAM 0133 | 7,91 | 9 | 9 | 8 |
| 537 | RAM 1023 | 7,79 | 9 | – | – |
| 538 | RAM 1033 | 6,66 | 9 | – | – |
| 539 | RAM 10334 | 8,04 | 8 | 9 | 9 |
| 540 | RAM 1333 | 7,29 | 9 | – | – |
| 541 | RAM 2614 | 7,18 | 9 | – | – |
| 542 | RAM 6475 | 7,59 | 9 | – | – |
| 543 | RAM 8143 | 7,88 | 9 | – | – |
| 544 | RAM 8149 | 7,68 | 9 | – | – |
| 545 | RAM 8153 | 8,11 | 9 | – | – |
| 546 | RAM 8663 | 7,76 | 9 | – | – |
| 547 | Rassel | 8,12 | 8 | 9 | 9 |
| 548 | Replik | 9,53 | 9 | – | – |
| 549 | Reia | 10,42 | 9 | – | – |
| 550 | RGT AXXTRIDE | 8,10 | 9 | 9 | 9 |
| 551 | RGT ALYXX | 8,20 | 9 | 9 | 9 |
| 552 | RGT ALYXX DUO | 12,60 | 8 | – | 7 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 553 | RGT ALOEXX | 9,12 | 8 | 9 | 9 |
| 554 | RGT ATTRAXXION | 10,13 | 9 | 9 | 8 |
| 555 | RGT BOXXER | 7,18 | 8 | 9 | 9 |
| 556 | RGT VOLGANIXX | 7,50 | 8 | 9 | 9 |
| 557 | RGT VOLXX | 7,79 | 7 | 9 | 9 |
| 558 | RGT HEXXAGONE | 10,64 | 9 | – | – |
| 559 | RGT HIMALAYAXX | 9,91 | 9 | – | – |
| 560 | RGT DUBLIXX | 8,21 | 9 | – | – |
| 561 | RGT EXXACT | 9,02 | 9 | 9 | 9 |
| 562 | RGT EXXEMPLAIR | 10,40 | 9 | 9 | 8 |
| 563 | RGT EXXALTAN | 7,83 | 9 | – | – |
| 564 | RGT EXXKI DUO | 10,10 | 9 | 9 | 8 |
| 565 | RGT ZANETIXX | 9,90 | 9 | 9 | 9 |
| 566 | RGT INEDIXX | 10,29 | 9 | 9 | 8 |
| 567 | RGT LEXXYPOL | 8,36 | 8 | 9 | 9 |
| 568 | RGT LIPEXX | 7,91 | 9 | – | – |
| 569 | RGT MAXXATAC | 9,35 | 8 | 9 | 9 |
| 570 | RGT MOTORIXX | 9,22 | 8 | 9 | 9 |
| 571 | RGT NOEMIXX | 10,98 | 9 | 9 | 8 |
| 572 | RGT OXXYMEL | 8,60 | 9 | 9 | 9 |
| 573 | RGT OXXYTOP | 10,00 | 8 | 9 | 9 |
| 574 | RGT PRETEXXTE | 8,34 | 9 | 9 | 9 |
| 575 | RGT PROVEXX | 8,58 | 9 | – | – |
| 576 | RGT REAXXION | 10,05 | 9 | 9 | 9 |
| 577 | RGT RIPLEXX | 8,97 | 8 | 9 | 9 |
| 578 | RGT SYNFONIXX | 9,31 | 9 | 9 | 9 |
| 579 | RGT SUFFIXXE | 8,71 | 8 | 9 | 9 |
| 580 | RGT TEXXIA | 10,65 | 8 | 9 | 9 |
| 581 | RGT FERARIXX WAXY | 8,20 | 9 | 9 | 9 |
| 582 | RGT FEROXXY | 9,31 | 9 | – | – |
| 583 | RGT CHROMIXX | 9,15 | 9 | – | – |
| 584 | Ribello | 8,34 | 9 | 9 | 9 |
| 585 | Robson | 8,25 | 8 | 9 | 9 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 586 | RODONIA | 6,94 | 9 | – | – |
| 587 | ROSALEEN | 11,20 | 8 | – | 7 |
| 588 | Roksi | 8,88 | 8 | 9 | 9 |
| 589 | Rolanda | 8,51 | 9 | 9 | 9 |
| 590 | ROMANCE | 8,05 | 9 | 9 | 9 |
| 591 | Ronaldinio | 8,98 | 9 | – | – |
| 592 | Rostavytsia | 7,91 | 8 | 9 | 9 |
| 593 | Rubikon | 7,89 | 9 | 9 | 9 |
| 594 | Rudesta | 8,34 | 9 | 9 | 9 |
| 595 | RUDILIA | 7,55 | – | – | – |
| 596 | Ruca | 7,87 | 7 | 8 | 9 |
| 597 | Rushnyk SV | 8,14 | 9 | – | – |
| 598 | S2610 | 7,36 | 9 | 9 | 9 |
| 599 | S3477 | 7,60 | 8 | 9 | 9 |
| 600 | S3825 | 9,64 | 9 | – | – |
| 601 | S3909 | 8,91 | 9 | – | – |
| 602 | S4210 | 9,88 | 9 | – | – |
| 603 | S4211 | 7,32 | 8 | 9 | 9 |
| 604 | Sabin | 8,13 | 8 | 9 | 9 |
| 605 | SALASI | 9,11 | 9 | 9 | 9 |
| 606 | SAN ALEXI RH | 8,23 | 8 | 9 | 9 |
| 607 | SAN LEO RH | 7,96 | 9 | 9 | 9 |
| 608 | SVETLANA | 8,59 | 9 | – | – |
| 609 | SEBASTEN | 8,08 | 9 | – | – |
| 610 | SEKENCE | 8,97 | 9 | 9 | 8 |
| 611 | SY AMBADOR | 7,32 | 8 | 9 | 9 |
| 612 | SY AMFORA | 8,77 | 8 | 8 | 9 |
| 613 | SY ARTOS | 9,75 | 9 | 9 | 9 |
| 614 | SY Batanga | 8,39 | 9 | – | – |
| 615 | SY GRANARIS | 8,61 | 8 | 9 | 9 |
| 616 | SY DIPLOMAT | 8,88 | 8 | 8 | 9 |
| 617 | SY HELENOR | 8,28 | 9 | 8 | 9 |
| 618 | SY ENERMAX | 8,35 | 9 | – | – |
| 619 | SY IMPULSE | 9,33 | 9 | – | – |
| 620 | SY INVICTUS | 8,18 | 9 | 9 | 9 |
| 621 | SY CARIOCA | 9,42 | 9 | 9 | 9 |
| 622 | SY COSMOS | 7,80 | 9 | 9 | 9 |
| 623 | SY MARIMBA | 9,74 | 9 | 9 | 8 |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 624 | SY MINERVA | 10,02 | 9 | 9 | 9 |
| 625 | SY OZONE | 8,74 | 9 | 9 | 9 |
| 626 | SY OCTEON | 10,27 | 9 | 9 | 8 |
| 627 | SY OLIVIA | 8,85 | 9 | 9 | 9 |
| 628 | SY ORPHEUS | 9,80 | 9 | – | – |
| 629 | SY PAMPLONA | 8,56 | 8 | 9 | 9 |
| 630 | SY PANDORAS | 9,27 | 9 | – | – |
| 631 | SY PREMEO | 9,67 | 9 | 9 | 9 |
| 632 | SY Rotango | 7,84 | 9 | – | – |
| 633 | SY SCORPIUS | 9,11 | 9 | – | – |
| 634 | SY SOLANDRI | 9,38 | 8 | 9 | 9 |
| 635 | SY TALISMAN | 7,21 | 9 | – | – |
| 636 | SY TELIAS | 7,37 | 9 | – | – |
| 637 | SY TOPAZE | 9,84 | 9 | 9 | 9 |
| 638 | SY TORINO | 9,65 | 9 | 9 | 9 |
| 639 | SY FABIO | 9,88 | 9 | 9 | 9 |
| 640 | SY FANTASIA | 7,75 | 9 | 9 | 9 |
| 641 | SY Fenomen | 8,16 | 9 | – | – |
| 642 | SY FORTAGO | 8,12 | 9 | – | – |
| 643 | SY PHOTON | 6,98 | 9 | – | – |
| 644 | SY FREGAT | 9,05 | 9 | 9 | 9 |
| 645 | SY CHORINTOS | 8,68 | 9 | – | – |
| 646 | SY HIKARI | 7,83 | 9 | 9 | 9 |
| 647 | SILVANER | 9,18 | 9 | – | – |
| 648 | SILVERCLOUD | 8,63 | 9 | 9 | 8 |
| 649 | Skadovs`kyi | 7,29 | 9 | – | – |
| 650 | SCANDINAV | 6,37 | 8 | 9 | 9 |
| 651 | Solitaro | 7,43 | 8 | 9 | 9 |
| 652 | SPECTRAL | 9,42 | 9 | 8 | 9 |
| 653 | ST Luka | 8,75 | 9 | 9 | 9 |
| 654 | ST Khaim | 7,82 | 9 | – | – |
| 655 | STINE 9401 | 8,29 | 8 | 9 | 9 |
| 656 | STINE 9714 | 8,84 | 9 | 9 | 9 |
| 657 | STINE 9808HP | 9,76 | 9 | 9 | 9 |
| 658 | STARMAS | 9,10 | 8 | – | 8 |
| 659 | STANLEY | 8,20 | 8 | – | 8 |
| 660 | Stepovyi | 9,30 | 9 | – | – |

*Continue of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 661 | Suringo | 10,50 | 8 | – | 7 |
| 662 | Tavrychanka | 8,22 | 9 | 9 | 8 |
| 663 | Takt | 7,73 | 9 | 9 | 9 |
| 664 | Talentro | 8,47 | 9 | – | – |
| 665 | Tarraco | 11,20 | 8 | – | 7 |
| 666 | TIADOR | 10,20 | 9 | – | – |
| 667 | Tiberius | 8,37 | 9 | 9 | 9 |
| 668 | Tirnavia | 7,54 | 9 | – | – |
| 669 | Tonifi CS | 8,57 | 9 | – | – |
| 670 | Toutati | 8,04 | 9 | – | – |
| 671 | Tronka | 8,55 | 9 | – | – |
| 672 | Turan | 9,09 | 8 | 9 | 9 |
| 673 | TURBOJET | 10,50 | 7 | – | 7 |
| 674 | WESLEY | 8,04 | 8 | 9 | 9 |
| 675 | Fabris | 8,07 | 8 | 9 | 9 |
| 676 | Faiett | 8,79 | 9 | 9 | 9 |
| 677 | Fight | 15,70 | 7 | – | 6 |
| 678 | Farmaxus | 7,78 | 8 | 8 | 9 |
| 679 | Farmactos | 14,60 | 7 | – | 7 |
| 680 | Farmurphy | 14,60 | 8 | – | 6 |
| 681 | Farmodena | 13,80 | 7 | – | 8 |
| 682 | Farmoritz | 14,20 | 7 | – | 7 |
| 683 | Farmpax | 16,80 | 7 | – | 7 |
| 684 | Farmueller | 8,85 | 9 | 9 | 9 |
| 685 | Pharrell | 8,96 | 9 | – | – |
| 686 | FERARIXX | 8,21 | 9 | – | – |
| 687 | FASHION | 7,26 | 9 | – | – |
| 688 | Fisixx | 8,14 | 9 | – | – |
| 689 | Filmeno | 10,10 | 9 | 9 | 9 |
| 690 | FRIZZBEE | 7,69 | 9 | – | – |
| 691 | FREEMAN | 9,15 | 8 | 9 | 9 |
| 692 | FUTURIXX | 8,63 | 9 | – | – |
| 693 | KhA Kvinta | 6,69 | 9 | 8 | 8 |
| 694 | HULK | 8,50 | 8 | – | 8 |
| 695 | Khunta | 9,05 | 9 | 9 | 9 |
| 696 | Zirkon | 9,46 | 8 | 9 | 9 |
| 697 | Zirkonia | 6,91 | 9 | – | – |

*End of Table 1*

| № | Hybrid | Yield, t/ha | Ustilago maydis (DC.) Corda, score | Maize stalk rot, score | Helminthosporiosis (leaf blight) of maize, score |
|---|---|---|---|---|---|
| 698 | CITADEL | 9,09 | 9 | 9 | 9 |
| 699 | Citrinia | 7,33 | 9 | – | – |
| 700 | Cherkaskyi 227 MV | 9,68 | 9 | 9 | 8 |
| 701 | Cherkaskyi 287 MV | 8,94 | 9 | – | – |
| 702 | Chornomor | 8,09 | 9 | 9 | 9 |
| 703 | Chamberi CS | 9,16 | 9 | – | – |
| 704 | Shkval | 8,99 | 9 | 9 | 9 |
| 705 | UNI 4302 | 8,94 | 9 | 9 | 9 |
| 706 | UNI2511 | 6,89 | 9 | 9 | 9 |
| 707 | UNI2910 | 9,23 | 8 | 9 | 9 |
| 708 | UNI3010 | 8,39 | 9 | 9 | 9 |
| 709 | UNI3210 | 9,70 | 9 | 9 | 8 |
| 710 | UNI3312 | 9,27 | 9 | 9 | 8 |
| 711 | UNI3313 | 9,41 | 9 | 9 | 8 |
| 712 | UNI3410 | 8,15 | 8 | 9 | 9 |
| 713 | UNI3414 | 7,92 | 8 | 9 | 9 |
| 714 | UNI3510 | 8,02 | 9 | 9 | 9 |
| 715 | UNI3511 | 9,15 | 9 | 9 | 8 |
| 716 | UNI3515 | 10,83 | 9 | 9 | 8 |
| 717 | UNI3616 | 8,74 | 8 | 9 | 9 |
| 718 | UNI3717 | 8,46 | 8 | 9 | 9 |
| 719 | UNI4000 | 9,18 | 9 | 9 | 9 |
| 720 | UNI4210 | 7,78 | 8 | 9 | 9 |
| 721 | UNI4211 | 7,57 | 8 | 9 | 9 |
| 722 | UNI4410 | 7,42 | 8 | 9 | 9 |
| 723 | UNI4417 | 8,64 | 8 | 9 | 9 |
| 724 | YAMAS | 9,82 | 7 | 9 | 9 |
| 725 | UNI3515 | 9,68 | 8 | 9 | 9 |
| 726 | MAC 20F | 8,88 | 9 | – | – |

**Stalk rot of maize**, caused by a complex of pathogens, primarily *Fusarium* spp., *Macrophomina phaseolina*, and *Diplodia* spp., is among the most damaging diseases, as it leads to the destruction of vascular tissues, disruption of assimilate transport, premature plant senescence, and increased lodging risk. Stalk rot is particularly dangerous under drought, high temperatures, and mineral nutrition imbalance; therefore, resistance to this disease is a key indicator of complex hybrid adaptability.

Registration data analysis shows that most maize hybrids exhibit medium to increased resistance to stalk rot. The predominant group (7–8 points) forms the core of modern varietal resources and ensures relative crop stability under moderate disease development.

Hybrids with high resistance (8–9 points) show limited damage to stalk tissues even under unfavorable hydrothermal conditions, reducing lodging and improving yield preservation until harvest. These hybrids are especially valuable in drought-prone regions and under intensive cultivation technologies.

Hybrids with medium resistance (6–7 points) generally maintain a satisfactory phytosanitary status under favorable conditions but may show increased susceptibility when stress factors combine. Their effective use strongly depends on optimized agronomic practices.

The proportion of hybrids with low resistance (≤5 points) is small, indicating their gradual exclusion from modern maize assortments (Table 1). The presence of such hybrids is usually associated with breeding value for other traits or adaptation to regions with lower infection pressure.

Correlation analysis revealed a weak positive relationship between stalk rot resistance and yield ($r$ = 0,17; $n$ = 435), indicating an indirect effect of this trait on productivity. Resistance primarily performs a stabilizing role by reducing lodging and premature plant death, especially during grain filling.

At the same time, this trait performs an important stabilizing function aimed at reducing the risk of yield losses associated with premature plant senescence, disruption of the vascular system of the stalk, and increased susceptibility of crops to lodging during the second half of the growing season. Increased resistance to stalk rot contributes to the maintenance of physiological activity of plants during the grain-filling period and ensures a more uniform realization of yield potential under unfavorable hydrothermal conditions.

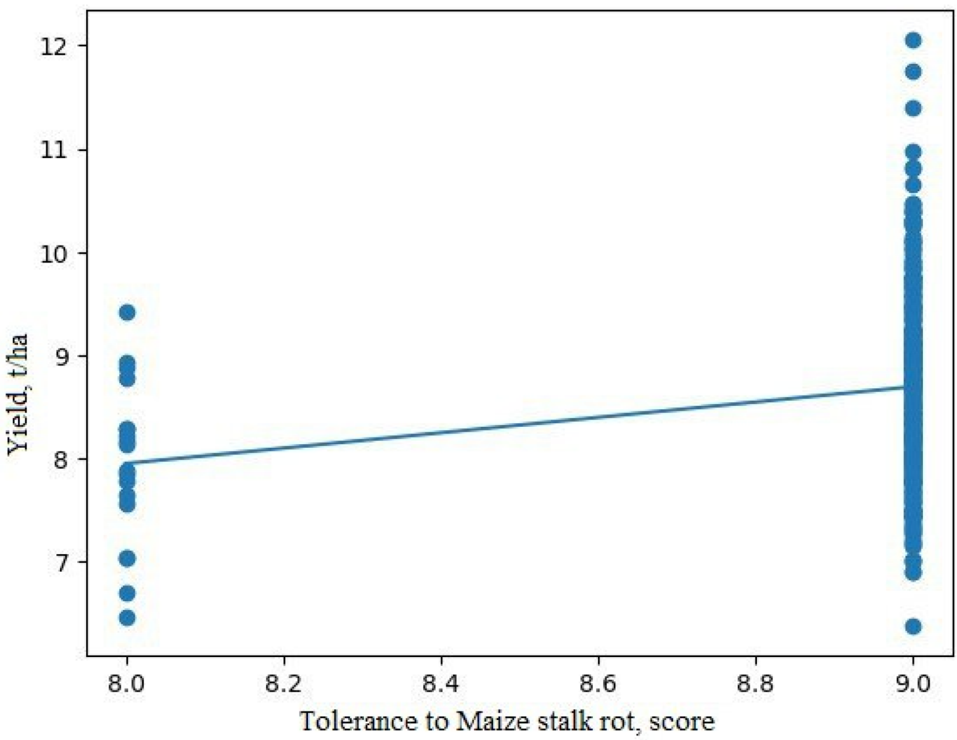


*Fig. 2. Relationship between resistance to stalk rot and grain yield of maize hybrids*

The scatter plot (Fig. 2) clearly illustrates the absence of a pronounced linear relationship between the studied parameters, confirming the multifactorial nature of maize yield formation. The distribution of experimental points indicates considerable yield variability within the same levels of resistance to stalk rot. Higher yield values are observed both among hybrids with a resistance score of 8 points and among those with the maximum score of 9 points, further emphasizing the auxiliary role of this trait in determining final productivity.

**Helminthosporiosis of maize,** caused by fungi of the genera *Exserohilum* and *Bipolaris* (notably *Exserohilum turcicum* and *Bipolaris maydis*), is one of the most widespread leaf diseases, leading to premature leaf senescence, reduction of assimilating surface, and decreased photosynthetic intensity. Resistance to this disease is a crucial component of biotic adaptability, especially under humid conditions and dense plant stands.

Most registered maize hybrids exhibit medium to increased resistance to helminthosporiosis, with hybrids rated at 7–8 points forming the basis of the modern varietal structure. Highly resistant hybrids (8–9 points) maintain active photosynthetic surface during critical yield formation stages and contribute to yield stabilization and reduced fungicide use.

Correlation analysis between resistance to helminthosporiosis and yield revealed a weak positive relationship ($r = 0{,}20$; $n = 724$), indicating that resistance is not a direct determinant of productivity. However, it plays a significant stabilizing role by preserving leaf function during grain filling, especially under favorable conditions for pathogen development.

Resistance to helminthosporiosis plays an important stabilizing role, as it contributes to the preservation of the functional activity of the leaf apparatus during critical stages of organogenesis and grain filling. Limiting the development of necrotic leaf lesions ensures a longer maintenance of the photosynthetically active surface, creating prerequisites for a more stable realization of the yield potential of hybrids, especially in years with increased humidity and conditions favorable for pathogen development.

The scatter plot (Fig. 3) clearly illustrates the absence of a pronounced linear relationship between the studied parameters, confirming the multifactorial nature of maize yield formation. The distribution of experimental points is rather scattered, and considerable yield variability is observed within the same levels of resistance to helminthosporiosis. Higher yield values are recorded both among hybrids with medium and high levels of resistance, indicating the significant role of other factors, including agronomic practices, weather conditions, and genetically determined productive potential.

The results of the correlation analysis confirm that resistance to helminthosporiosis is an auxiliary component of maize hybrid adaptability, ensuring phytosanitary stability of crops and reducing the risk of yield decline under unfavorable conditions, but not directly determining the level of productivity. This substantiates the expediency of a comprehensive approach to hybrid evaluation, in which resistance to helminthosporiosis is considered in combination with other biotic and abiotic traits when formulating recommendations for their use under specific agroecological conditions.

**Conclusions.** Common smut, stalk rot, and helminthosporiosis are among the most harmful maize diseases, significantly affecting crop phytosanitary status and yield stability, particularly under stress conditions.

Modern maize varietal resources in Ukraine are dominated by hybrids with medium to increased resistance (7–8 points) to major diseases, reflecting substantial breeding progress toward enhanced biotic adaptability.

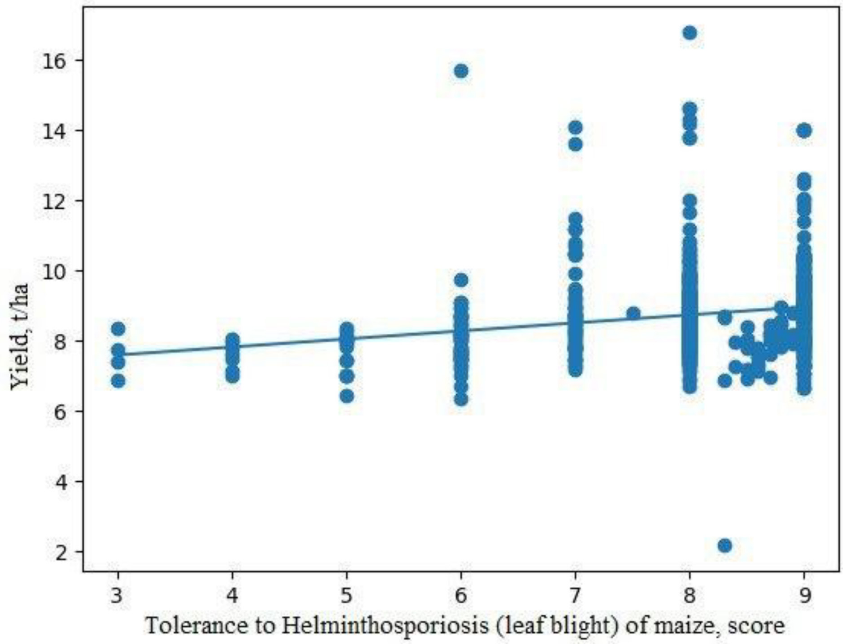


*Fig. 3. Relationship between resistance to helminthosporiosis and grain yield of maize hybrids*

A considerable proportion of highly resistant hybrids (8–9 points) creates prerequisites for reducing phytosanitary risks, yield losses, and dependence on chemical plant protection measures.

Domestic and foreign hybrids generally exhibit similar resistance levels, while Ukrainian hybrids are distinguished by better adaptation to local soil and climatic conditions.

Correlation analysis revealed weak positive relationships between disease resistance and yield ($r$ = 0,17–0,20), indicating that resistance plays an auxiliary rather than a determining role in productivity formation.

Resistance to major diseases primarily performs a stabilizing and protective function; therefore, hybrid selection should be based on a comprehensive assessment combining resistance with other adaptive and productive traits.

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Дата першого надходження статті до видання: 26.01.2026
Дата прийняття статті до друку після рецензування: 20.02.2026
Дата публікації (оприлюднення) статті: 13.04.2026