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FIELD GERMINATION OF ULTRA-EARLY MATURING WINTER WHEAT VARIETIES “ULTRA” AND “FLESH”

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Abstract: The article presents the results of field germination studies of ultra-early winter wheat varieties Flesh, Ultra, and Chillaki during 2024–2025. The results showed that Flesh and Ultra varieties had higher field germination rates than the control variety in both years. The highest values were recorded for the Flesh variety, indicating its potential for cultivation.

Keywords: winter wheat, ultra-early varieties, field germination, Flesh, Ultra, Chillaki.

“ULTRA” VA “FLESH” ULTRATEZPISHAR KUZGI BUG‘DOY NAVLARINING DALA UNUVCHANLIGI

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Annotatsiya: Maqolada 2024–2025 yillarda ultratezpishar kuzgi bug‘doyning Flesh, Ultra va Chillaki navlarining dala unuvchanligi o‘rganilgan. Tadqiqot natijalariga ko‘ra, Flesh va Ultra navlari har ikki yilda ham nazorat naviga nisbatan yuqori unuvchanlik ko‘rsatdi. Eng yuqori dala unuvchanligi Flesh navida qayd etilib, uning istiqbolli nav ekanligi aniqlandi.

Kalit so‘zlar: kuzgi bug‘doy, ultratezpishar navlar, dala unuvchanligi, Flesh, Ultra, Chillaki.

ПОЛЕВАЯ ВСХОЖЕСТЬ УЛЬТРАСКОРОСПЕЛЫХ СОРТОВ ОЗИМОЙ ПШЕНИЦЫ «УЛЬТРА» И «ФЛЕШ»

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Аннотация: В статье представлены результаты изучения полевой всхожести ультраскороспелых сортов озимой пшеницы Ультра, Флеш и Чиллаки в 2024–2025 годах. Установлено, что сорта Ультра и Флеш в оба года исследований обеспечили более высокую полевую всхожесть по сравнению с контрольным сортом. Наилучшие показатели отмечены у сорта Флеш, что свидетельствует о его перспективности для возделывания.

Ключевые слова: озимая пшеница, ультраскороспелые сорта, полевая всхожесть, Ультра, Флеш и Чиллаки

INTRODUCTION

According to Resolution No. PQ-465 of the President of the Republic of Uzbekistan, dated December 30, 2024, “On Measures to Increase Agricultural Production through the Effective Utilization of Additional Opportunities Available on Agricultural Lands,” a new system has been introduced to improve the cultivation of agricultural products on field margins, household plots, residential homesteads, areas surrounding multi-story apartment buildings, and along the internal streets of local communities (mahallas). The resolution aims to enhance the efficient use of available land resources and increase agricultural production through the implementation of improved cultivation practices [4].

MATERIALS AND METHODS

The implementation of proper agronomic practices plays a crucial role in achieving high and quality yields from agricultural crops, particularly winter wheat. The formation of an optimal plant stand by the end of the establishment period is closely associated with numerous factors and agro-technological practices, including seed quality, sowing method, seeding rate, and sowing time. In the conducted experiments, all studied winter wheat varieties were sown on the same date, and identical irrigation rates were applied across all experimental treatments. To determine seedling density at the beginning of the growing season, observations were carried out during the period when seedling emergence was complete. These observations were conducted for each variety across all replications of the experiment at three designated points within a 1 m² area marked with stakes [1].

The field germination of winter wheat seeds in the experimental field was attributed to favorable air temperature conditions, which created an optimal environment for rapid seed emergence. In particular, it was observed that winter wheat seeds sown during the third ten-day period of October germinated within four days after sowing.

In the experiments conducted by A. Masharipov and L. Jumaniyozova, the winter wheat variety “Krasnodarskaya” was grown under the conditions of weakly saline, heavy loamy soils of the Khorezm region, where the groundwater table was located at a depth of 1.7–2.0 m. The results showed that the germination rate of winter wheat seeds was higher in 2014 than in 2015. Depending on the treatment, the number of emerged plants per 1 m² ranged from 467.3 to 478.9 plants in 2014, whereas in 2015 the number of emerged plants varied between 460.2 and 468.7 plants per 1 m² [2].

In the studies conducted by R. Siddiqov and colleagues, sowing dates and seeding rates were found to have a significant influence on the development of leaf area in winter wheat varieties. The results showed that as sowing dates were delayed, leaf area progressively decreased, while a similar trend was observed across all seeding rates, indicating a consistent pattern regardless of the sowing density applied [3].

RESULTS

The results obtained in 2024 showed differences in field germination among the ultra-early winter wheat varieties studied. Observations of emerged plants were conducted on 1 m² plots with three replications. During the first observation, the "Flesh" variety recorded 309.5 plants m^{-2}, corresponding to 61.9% field germination. The "Ultra" variety produced 302.6 plants m^{-2} (60.6%), while the control variety "Chillaki" showed 250.4 plants m^{-2} (50.8%).

During the second observation, the number of emerged plants increased to 421.7 plants m^{-2} (84.3%) in the "Flesh" variety and 415.6 plants m^{-2} (83.1%) in the "Ultra" variety. The control variety "Chillaki" recorded 390.8 plants m^{-2}, corresponding to 78.1% field germination. By the third observation, the highest field germination was observed in the "Flesh" variety, reaching 481.5 plants m^{-2} (96.3%). The "Ultra" variety achieved 472.8 plants m^{-2} (94.6%), while the control variety "Chillaki" recorded 463.5 plants m^{-2} (92.7%). These results indicate that the "Flesh" and "Ultra" varieties exhibited higher field germination compared with the control variety under the conditions of the experiment.

In 2025, observations of emerged plants of ultra-early winter wheat varieties were conducted on 1 m² plots with three replications. During the first observation, the "Flesh" variety recorded 331.7 plants m^{-2}, corresponding to 66.3% field germination. The "Ultra" variety produced 322.4 plants m^{-2} (64.5%), while the control variety "Chillaki" showed 280.3 plants m^{-2}, equivalent to 56.1% field germination.

During the second observation, the number of emerged plants reached 376.3 plants m^{-2} (75.3%) in the "Flesh" variety and 372.7 plants m^{-2} (74.5%) in the "Ultra" variety. The control variety "Chillaki" recorded 354.9 plants m^{-2}, corresponding to 71.0% field germination. By the third observation, field germination further increased in all varieties. The highest value was observed in the "Flesh" variety, which reached 457.9 plants m^{-2} (91.6%). The "Ultra" variety achieved 453.2 plants m^{-2} (90.6%), while the control variety "Chillaki" recorded 433.8 plants m^{-2} (89.4%). The results demonstrated that the "Flesh" and "Ultra" varieties maintained higher field germination rates than the control variety throughout the observation period, indicating their good adaptability and establishment under the experimental conditions.

1- table. Field germination of ultra-early maturing winter wheat varieties (plants m^{-2}, %) in 2024

Winter wheat varieties.	Field germination, plants/%					
	Observation 1	%	Observation 2	**%**	Observation 3	%
Chillaki (control)	250,4	50,8	390,8	78,4	463,5	92,7
Flesh	309,5	61,9	421,1	84,3	481,5	96,3
Ultra	302,6	60,6	415,6	83,1	472,8	94,6

2- table. Field germination of ultra-early maturing winter wheat varieties (plants m^{-2}, %) in 2025

Winter wheat varieties.	Field germination, plants/%					
	Observation 1	%	Observation 2	**%**	Observation 3	%
Chillaki (control)	280,3	56,1	354,9	71,0	433,8	89,4
Flesh	331,7	66,3	376,3	75,3	457,9	91,6
Ultra	322,4	64,5	372,7	74,5	453,2	90,6

DISCUSSION

The two-year data show a consistent ranking of the studied varieties. In both 2024 and 2025 the “Flesh” variety produced the highest field germination at every observation date, followed by “Ultra”, while the control variety “Chillaki” gave the lowest values. At the final observation the advantage of “Flesh” over the control amounted to 3.6 percentage points in 2024 (96.3% against 92.7%) and 2.2 percentage points in 2025 (91.6% against 89.4%). The same ordering was maintained from the first observation onwards, which indicates that the difference is established already at the emergence stage rather than developing later.

Field germination was lower in 2025 than in 2024 in all three varieties — for example, 91.6% against 96.3% in “Flesh” — which is consistent with the well-documented dependence of seedling emergence on the air-temperature and soil-moisture regime prevailing during the sowing period. A comparable year-to-year variation was reported by A. Masharipov and L. Jumaniyozova, who recorded 467.3–478.9 plants m^{-2} in 2014 against 460.2–468.7 plants m^{-2} in 2015 under the conditions of the Khorezm region [2]. The values obtained in the present experiment fall within a comparable range, which suggests that the observed between-year differences are governed primarily by the growing-season conditions rather than by the varieties themselves.

From a practical standpoint, the higher and more uniform emergence of “Flesh” and “Ultra” is of considerable importance, since a dense and even plant stand formed before the onset of winter dormancy is a precondition for successful overwintering and for the subsequent formation of a high grain yield.

CONCLUSIONS

The results of field experiments conducted during 2024–2025 showed that no significant differences or consistent trends were observed among the winter wheat varieties in terms of the number of emerged seedlings and field germination. The cultivation of ultra-early winter wheat varieties at optimal sowing dates, determined according to the soil and climatic conditions of each region, promotes uniform seed emergence, proper plant development before winter dormancy, successful overwintering, and ultimately higher grain yields.

Under the irrigated typical gray soil conditions of the Tashkent region, field germination of ultra-early winter wheat varieties was found to be closely related to laboratory germination capacity. Varieties with higher laboratory germination rates, particularly “Flesh” and “Ultra”, also exhibited higher field germination, ensuring rapid and uniform seedling establishment under field conditions.

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