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THE INFLUENCE OF SOWING DATE ON YIELD AND QUALITY OF WINTER BARLEY AND TWO-ROW BARLEY

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Abstract: The study aimed to evaluate the influence of sowing date on grain yield and the main quality parameters of two autumn-sown cereals, barley, cultivar Iulian, and two-row barley, cultivar Diana. The research was carried out during two growing seasons, 2024-2025 and 2025-2026, under field conditions, using five sowing dates established at approximately two-week intervals. In the first growing season, sowing was performed on September 20, October 5, October 15, October 30, and November 15, while in the second growing season, sowing dates were September 24, October 7, October 21, November 5, and November 19. Grain yield and quality parameters, namely thousand-grain weight (TKW) and hectoliter weight (HLW), were determined. For barley, in the 2024–2025 growing season, yield increased up to the third sowing date, reaching 6383 kg/ha, after which it declined, reaching 5388 kg/ha at the latest sowing date. In 2025-2026, the highest yield was recorded at the first sowing date 7127 kg/ha, while delayed sowing resulted in a significant decrease in yield, down to 5176 kg/ha. TKW and HLW showed moderate variations, with maximum values of 43.9 g and 62.7 kg/hl, respectively. For two-row barley, the maximum yield was 7727 kg/ha at the second sowing date in the first year and 6355 kg/ha at the second sowing date in the second year, after which yield progressively decreased at the later sowing dates. In general, delayed sowing resulted in lower yield, as well as reductions in TKW and HLW. It is recommended to plant barley between September 20 and October 15, and two-row barley between October 5 and October 21, to attain higher grain yield and favorable grain quality.

• Introduction

- The aim of this study is to evaluate the influence of sowing date on grain yield, thousand-grain weight, and hectoliter weight in barley, cultivar Iulian, and two-row barley, cultivar Diana, in order to identify the sowing periods that provide favorable results in terms of both yield and grain quality.
- In this context, evaluating the influence of sowing date on barley, cultivar Iulian, and two-row barley, cultivar Diana, is important for identifying effective cultivation practices. Analyzing the results obtained over two growing seasons allows variations in grain yield and quality to be assessed under different climatic conditions.

• Material and method

- The research was conducted under field conditions at the National Agricultural Research and Development Institute (NARDI) Fundulea, Romania, during the 2024–2025 and 2025–2026 growing seasons.
- The study aimed to evaluate the influence of sowing date on grain yield and quality parameters in autumn-sown barley and two-row barley, using the cultivars Iulian and Diana, respectively.
- Five sowing dates were evaluated in each growing season, at approximately two-week intervals. In the 2024–2025 growing season, sowing was performed on September 20, October 5, October 15, October 30, and November 15. In the 2025–2026 growing season, sowing dates were September 24, October 7, October 21, November 5, and November 19.
- In the 2024–2025 agricultural year, total precipitation was 390.8 mm, with an uneven distribution, while in 2025–2026 it increased to 518.3 mm. Differences in temperature and precipitation between the two growing seasons resulted in distinct climatic conditions for barley and two-row barley.

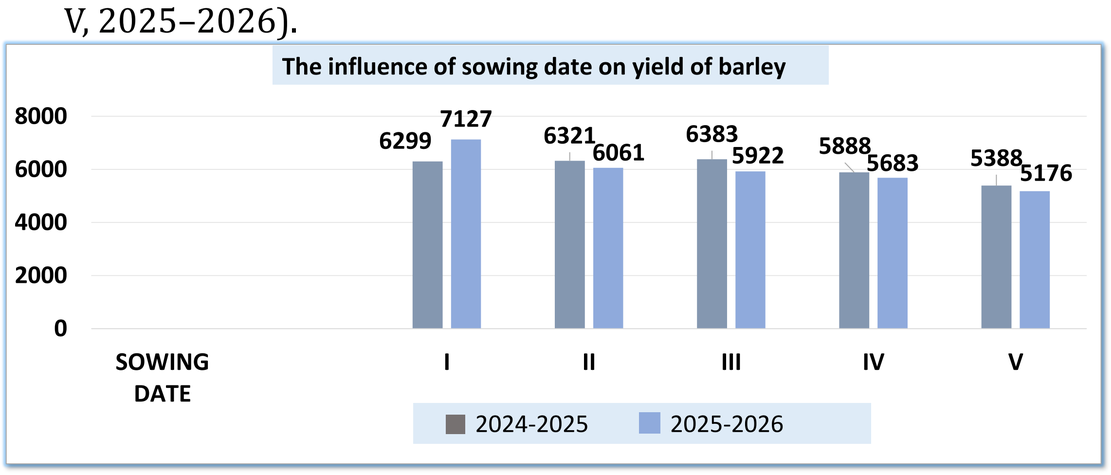
• Conclusions

- Climatic conditions influenced barley yield and grain quality, with higher precipitation recorded in 2025–2026 (518.3 mm) compared with 2024–2025 (390.8 mm).
- For autumn barley (cv. Iulian), sowing date III provided the best results in 2024–2025, with a yield of 6383 kg/ha and a TKW of 43.90 g. For two-row barley (cv. Diana), sowing date II achieved the highest yields in both seasons: 7727 kg/ha and 6355 kg/ha.
- Late sowing (dates IV–V) generally resulted in lower yields and reduced grain quality, highlighting the importance of selecting the appropriate sowing period.

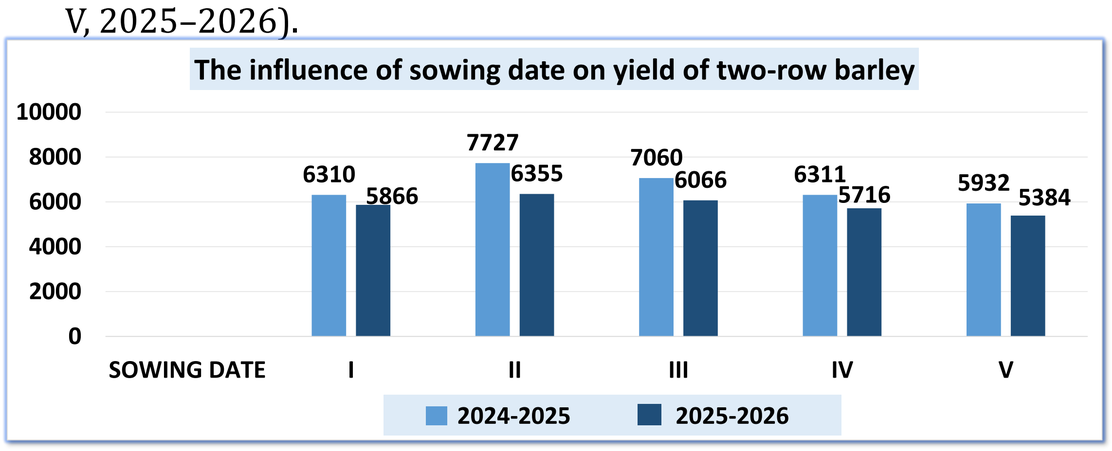
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• Results and discussions

- The maximum yield reached 7127 kg/ha (Sowing Date I, 2025–2026), whereas the minimum yield was 5176 kg/ha (Sowing Date V, 2025–2026).



- The maximum yield potential reached 7727 kg/ha (Sowing Date II, 2024–2025), while the minimum was 5384 kg/ha (Sowing Date V, 2025–2026).



The influence of sowing date on thousand-grain weight (TKW) and hectoliter weight (HLW) of autumn barley and two-row barley

- The highest TKW value of 43.90 g was recorded in sowing date III (2024–2025), while the lowest value of 40.70 g was obtained in sowing date V of the same growing season. The maximum HLW value of 62.70 kg/hl was reached in sowing date III (2025–2026), and the minimum value of 58.60 kg/hl was observed in sowing date V (2024–2025).
- The maximum TGW level was 52.40 g (Sowing Date I, 2025–2026), while the minimum was 49.20 g (Sowing Dates IV and V, 2024–2025). The highest value of 62.40 kg/hl was obtained in sowing date III (2025–2026), and the lowest value of 60.10 kg/hl was found in sowing date V (2024–2025).

		Barley		Two-row barley	
SOWING DATE	YEAR	TKW (g)	HLW (kg/hl)	TKW (g)	HLW (kg/hl)
I	2024 -2025	41.8	58,7	51,2	60.4
II		43,1	58.9	51,6	62,3
III		43,9	59.3	51,4	62,3
IV		43,1	59,3	49,2	61.8
V		40,7	58.6	49,2	60.1
I	2025 - 2026	43,3	59,1	52,4	61,8
II		42,0	60,3	48,0	61,1
III		43.7	62,7	51,6	62,4
IV		42.0	60.1	47,6	60.8
V		41,9	59.6	47,7	60,8