

Multi-Location Assessment of Sunflower Genotypes in Romania Over Two Drought-Affected Years



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INTRODUCTION

In Romania, sunflower was cultivated on 1.243.250 hectares in 2024 and on 1.183.640 hectares in 2025, less with 59.610 hectares than in year 2024. Booth years, 2024 and 2025 were affected by drought especially in period of flowering and seed ripening (BBCH 70-85).

METHODOLOGY

This study evaluated four sunflower hybrids, FD15E27 (Express Sun hybrid), HS2372C (conventional hybrid), HS2312CLP (Clearfield Plus hybrid) and HS2309E (Express Sun hybrid) - across ten locations in Romania during 2024 and 2025, to assess genotype and environment (G×E) interactions.

RESULTS AND DISCUSSION

Average seed yield of these four sunflower hybrids was 2315 kg/ha in year 2024 and 2650 Kg/ha in 2025, lower with 335 kg/ha in year 2024 than 2025. In year 2024, the highest seed yield where registered by sunflower hybrid HS2372C (3703 kg/ha) in Mircea Voda location, Braila County and the lowest seed yield where 1171 kg/ha in Rosiorii de Vede location, Teleorman county, registered by the same sunflower hybrid. In year 2025, the highest seed yield where registered by sunflower hybrid FD15E27 (4244 kg/ha) in Mircea Voda location, Braila County and the lowest seed yield where 617 kg/ha in Giurgita location, Dolj County, registered by sunflower hybrid HS2372C.

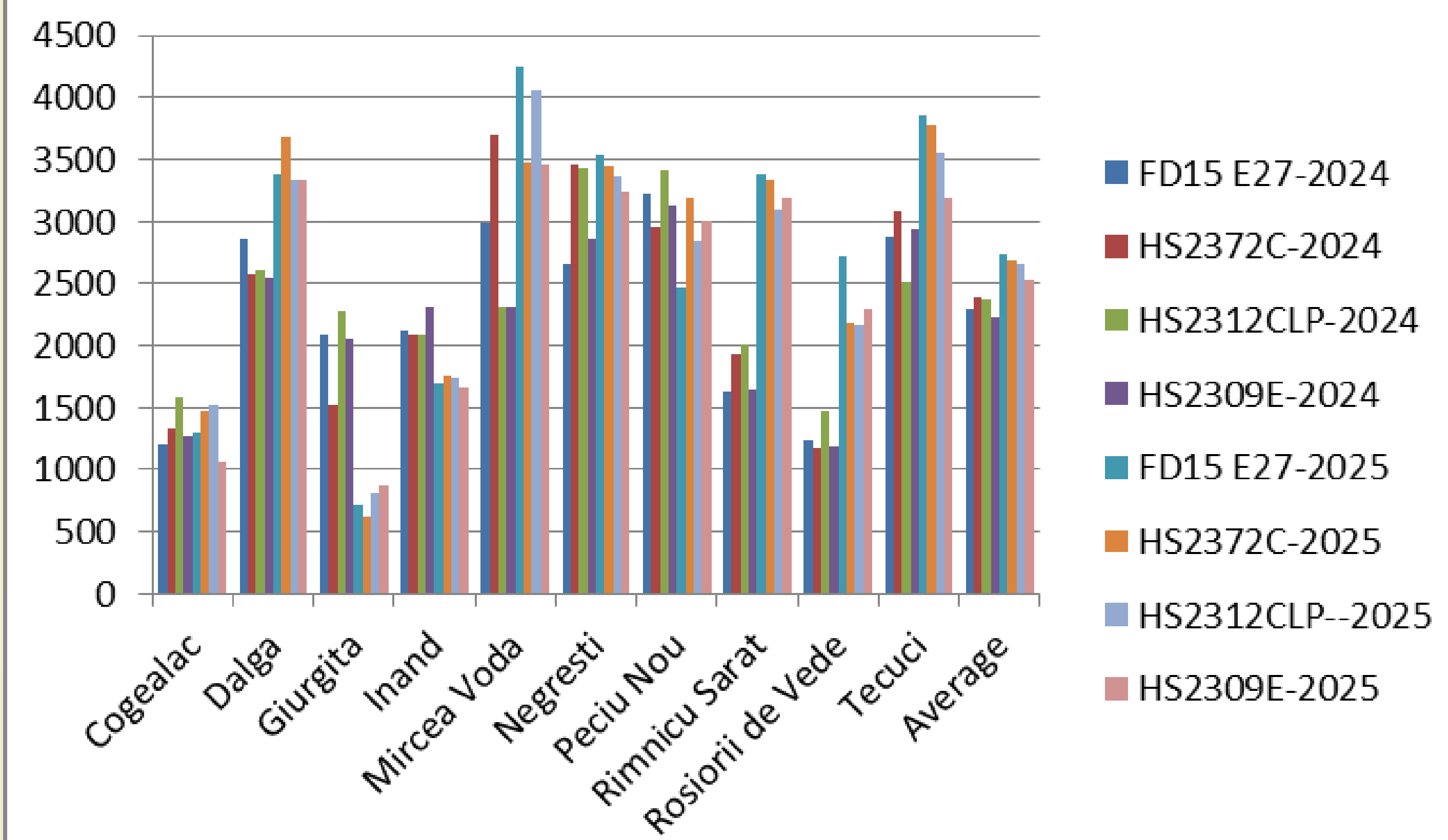
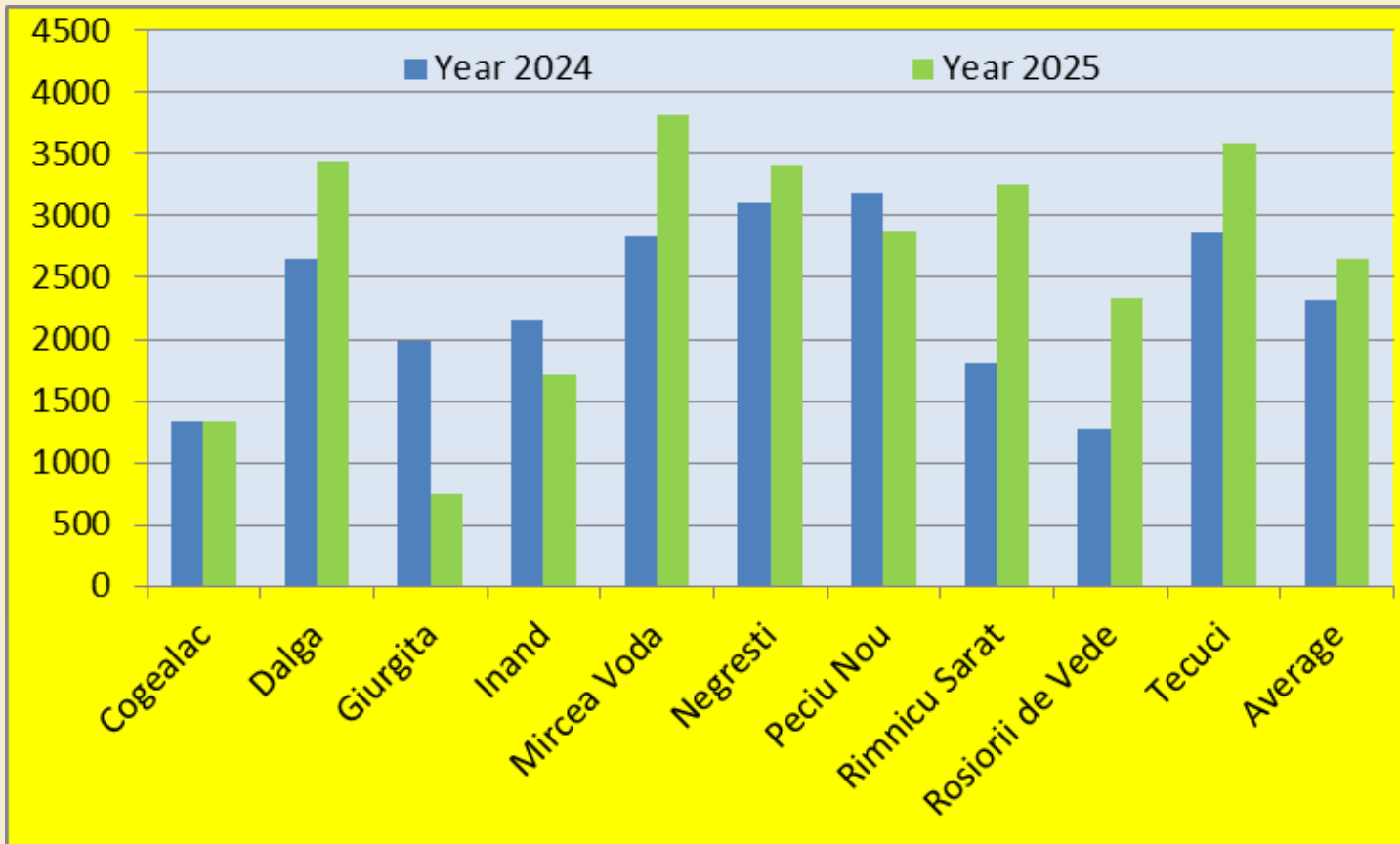
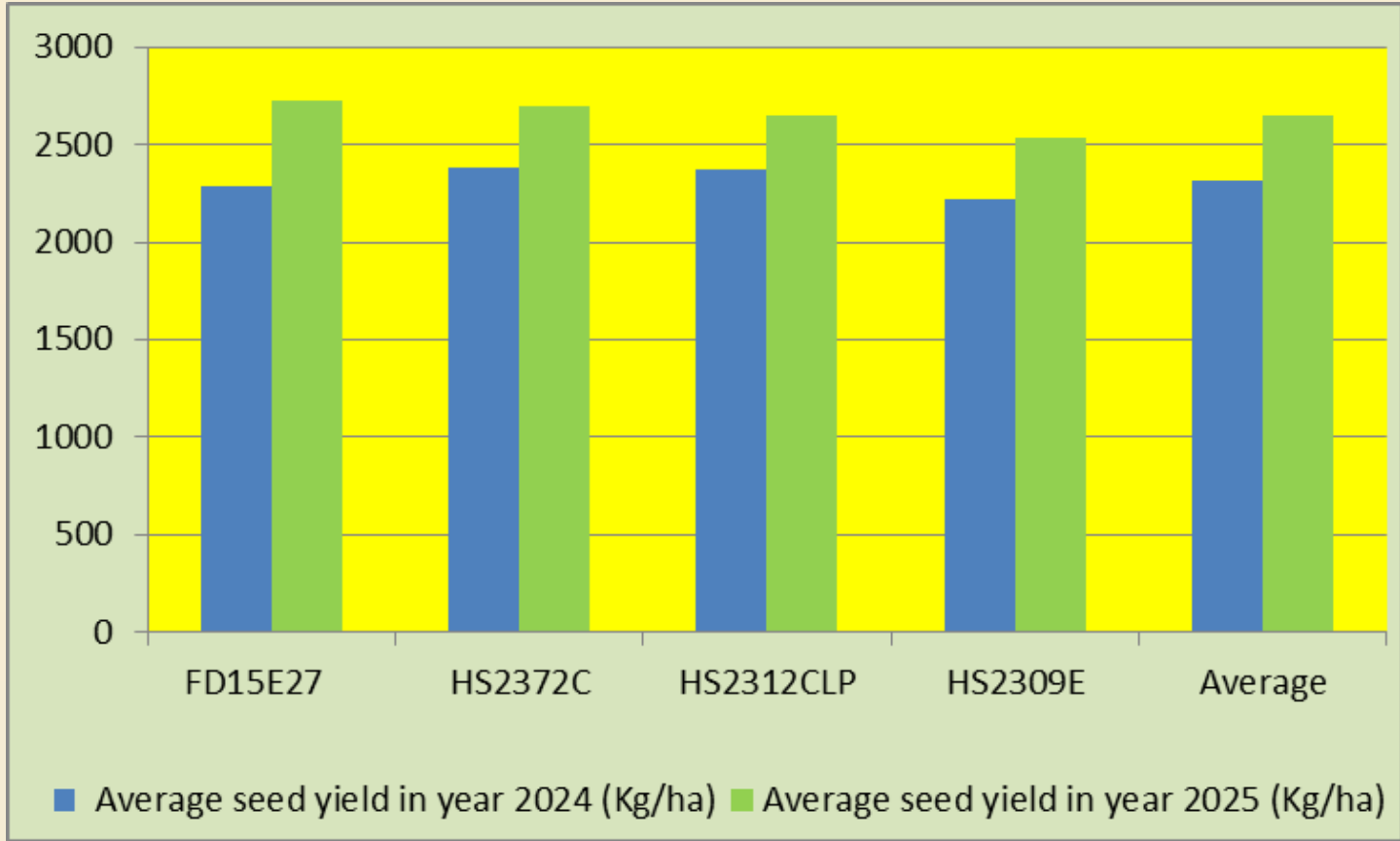
Plant height in year 2024 ranged from 84 cm in HS2309E (Inand, Bihor County) to 220 cm in HS2312CLP (Negresti , Vaslui County). In 2025, plant height ranged from 109 cm in HS2309E (Inand, Bihor County) to 190 cm in HS2312CLP (Mircea Vodă, Brăila County).

The thousand seed weight (TSW-grams) where in year 2024 between 28 g at HS2312CLP in Rosiorii de Vede location, Teleorman county and 72 g at HS2309E in Peciu Nou location, Timis county.

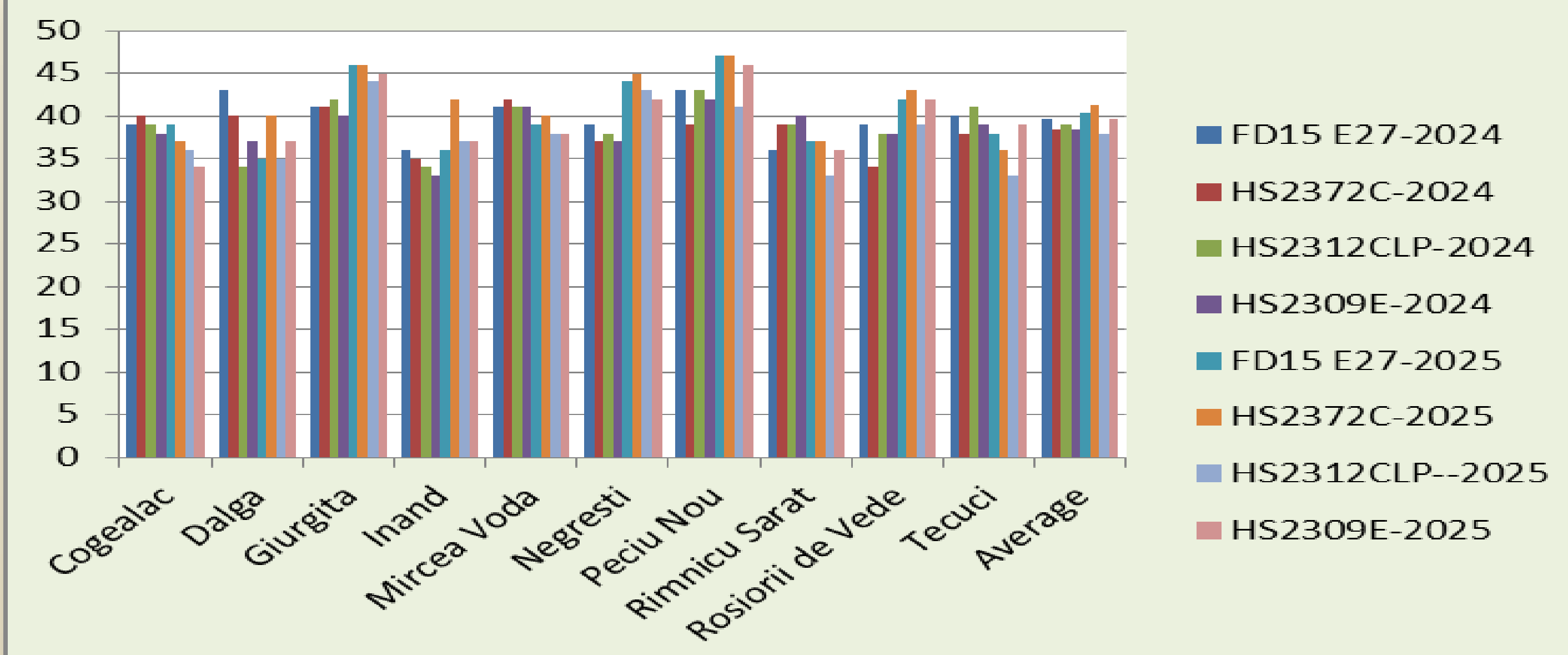
One thousand seed weight (TSW-grams) where in year 2025 between 30 g at HS2309E in Cogealac location, Constanta county and 91g at HS2312CLP in Mircea Voda location, Braila county.

Hectoliter weight (HW – kg/hl) where in year 2024 between 33 kg/hl at HS2309E in Inand location, Bihor county and 43 kg/hl at FD15E27 in Peciu Nou location and in Timis county, Dalga locatiom, Calarasi county and at HS2312CLP in Peciu Nou location, Timis county. Hectoliter weight (HW – kg/hl) where in year 2025 between 33 kg/hl at HS2312CLP in Rimnicu Sarat, Buzau county, Tecuci location, Galati county and 47 kg/hl at sunflower hybrids FD15E27 and HS2372C in Peciu Nou location, Timis county.

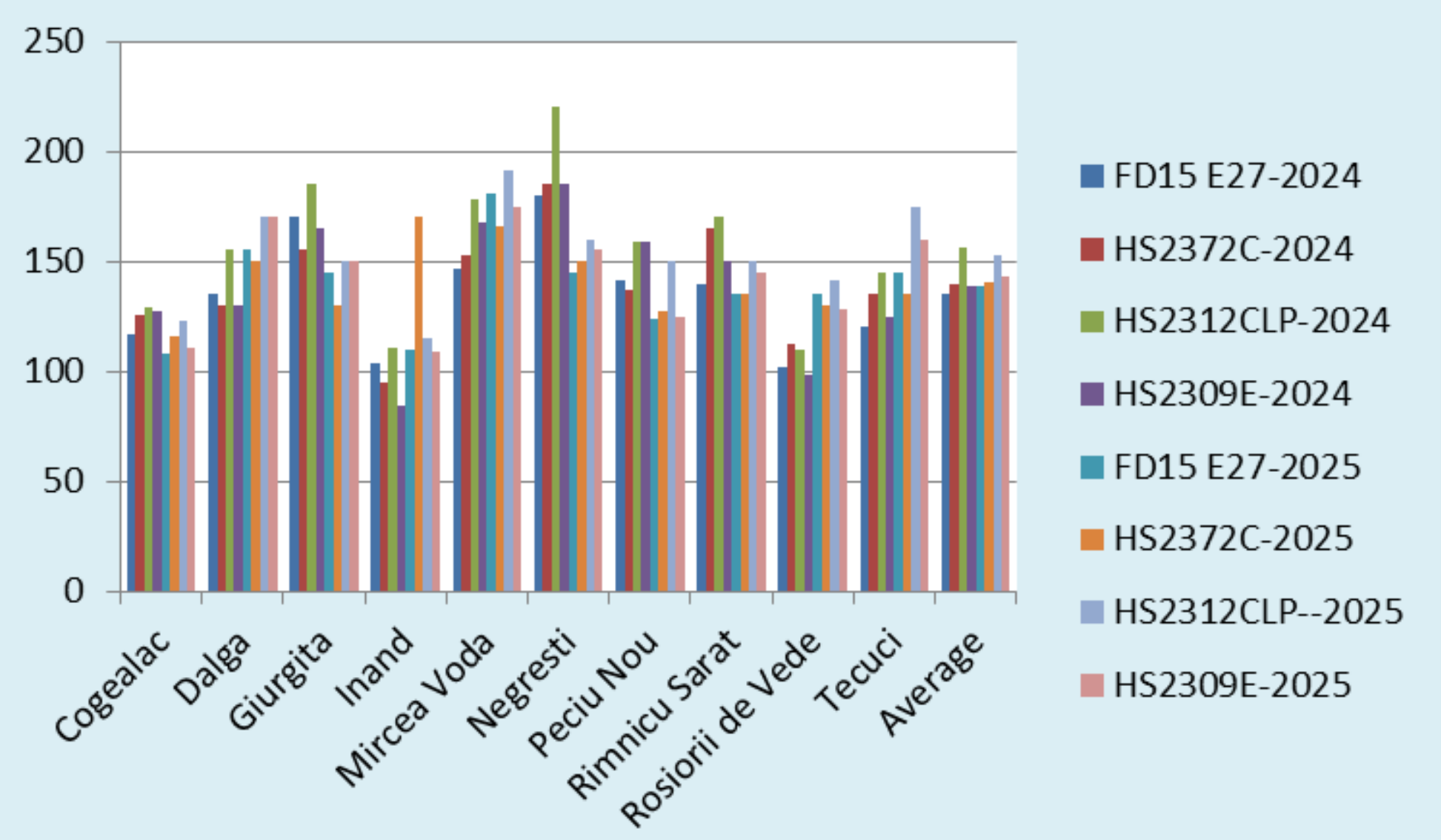
Sunflower genotype	Average seed yield in year 2024 (Kg/ha)	Difference	Average seed yield in year 2025 (Kg/ha)	Difference
FD15E27	2288	-27	2729	+79
HS2372C	2383	+68	2693	+43
HS2312CLP	2369	+54	2648	-2
HS2309E	2223	-62	2530	-120
Average	2315	-	2650	-



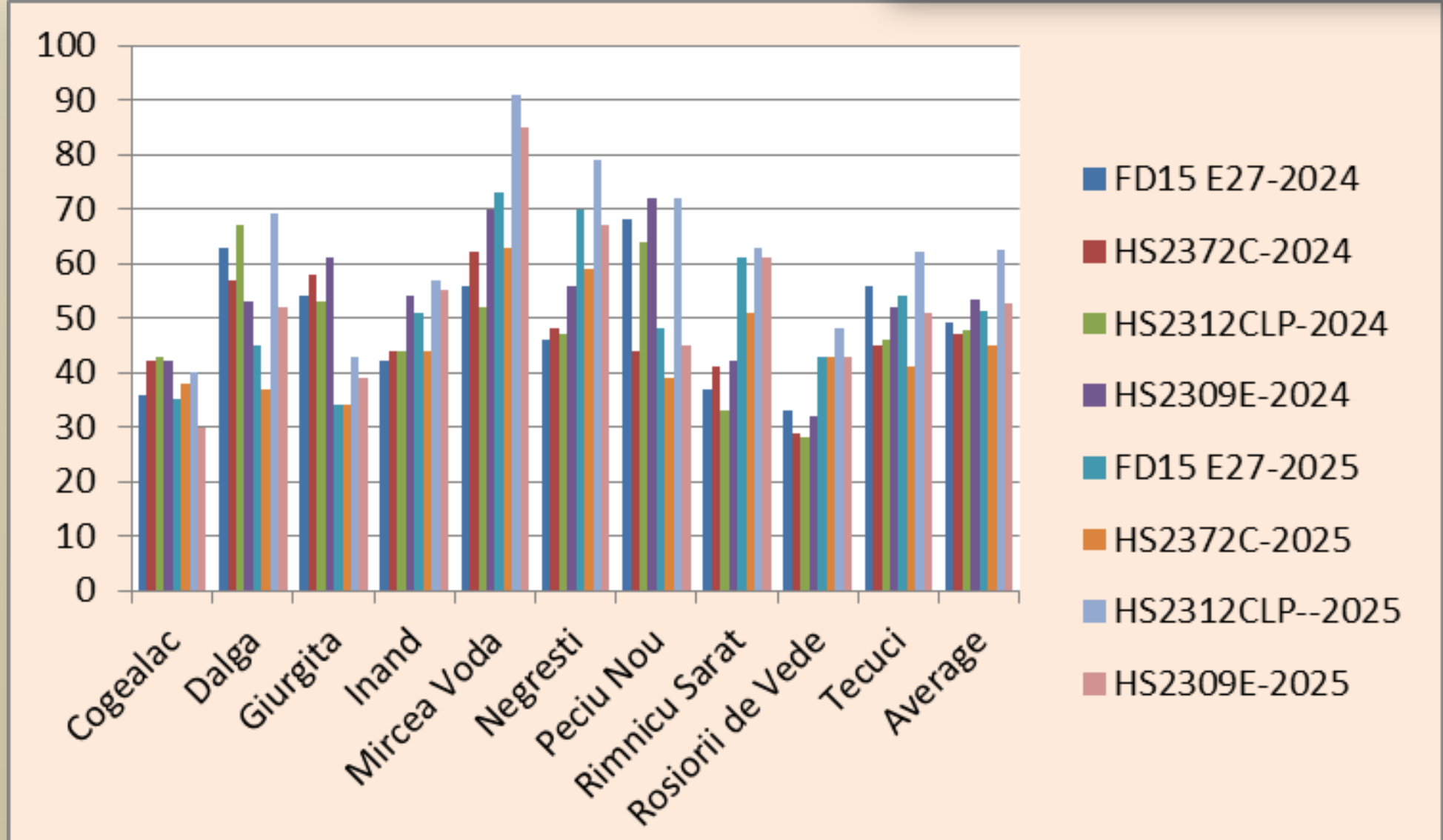
Average seed yield Kg/ha, in 10 locations, in years 2024 and 2025



Hectoliter weight (HW – kg/hl), in years 2024 and 2025



Average height of sunflower hybrids, in years 2024 and 2025



One thousand seed weight (TSW-grams), in years 2024 and 2025



CONCLUSIONS

In both years 2024 and 2025, sunflower culture was affected by drought and high temperatures from months June to August who led to low seed yield at national level. There was no significant difference between years 2024 and 2025 regarding average seed yield of sunflower studied. Sunflower hybrid HS2372c cultivated in conventional system is the most stable regarding seed yield in booth years of studies. These results show substantial variability among sunflower hybrids under drought-affected conditions, highlighting the importance of G×E interactions in sunflower performance across Romania.