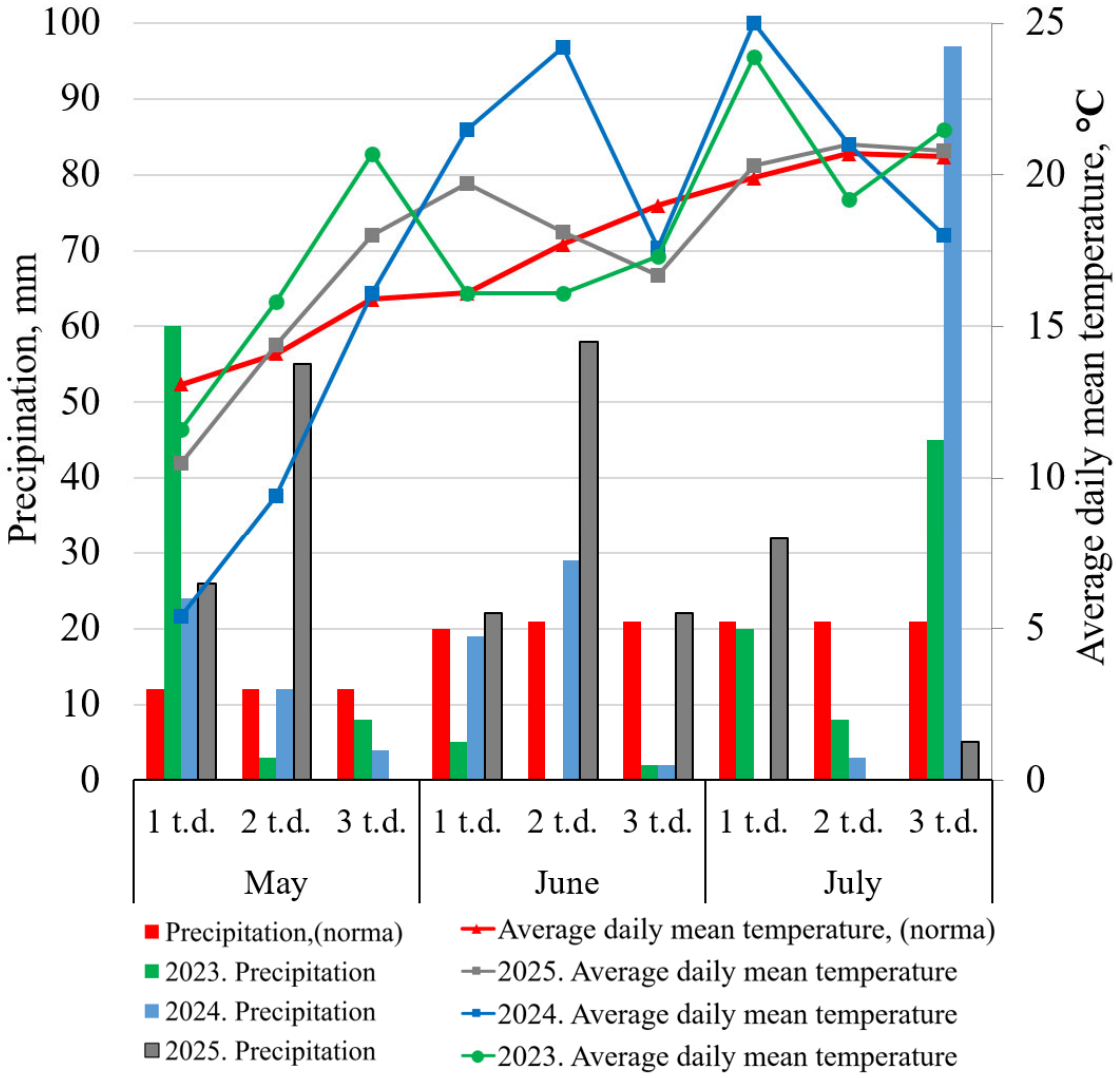



**Figure S1.** Average daily mean temperature (lines) and precipitation (columns) during the growing season of winter rye (May, June, and July) in 2023–2025 at the experimental site Bolshiye Kaban. Data for 2023, 2024, and 2025 are shown in green, blue, and gray, respectively. The "Norma" (shown in red) represents the long-term average value for the period 1993–2023. 1 t.d., 2 t.d., and 3 t.d. denote the first, second, and third ten-day periods of each month, respectively. Periods without bars indicate no recorded precipitation; only intervals with measurable precipitation are displayed. Flowering periods for the tested winter rye varieties were 30 May-13 June in 2023, 6-15 June in 2024, and 1-9 June in 2025.