Table S1 Irrigation amount and nitrogen fertilization rate at different growing stages of winter wheat in the 2021–2022 and 2022–2023 growing seasons.

Growing season	Management practice	N treatment	Irrigation amount (mm)					Nitrogen fertilizer rate (kg ha^{-1})		
			WS	JS	BS	FS	Total	PS	JS	Total
2021-2022	FB	N0	60	60	60	60	240	0	0	0
		T0	60	60	60	60	240	150	0	150
		T40	60	60	60	60	240	150	40	190
		T80	60	60	60	60	240	150	80	230
		T120	60	60	60	60	240	150	120	270
		T160	60	60	60	60	240	150	160	310
	DF	N0	60	40	40	40	180	0	0	0
		T0	60	40	40	40	180	150	0	150
		T40	60	40	40	40	180	150	40	190
		T80	60	40	40	40	180	150	80	230
		T120	60	40	40	40	180	150	120	270
		T160	60	40	40	40	180	150	160	310
2022-2023	FB	N0	60	60	60		180	0	0	0
		T0	60	60	60		180	150	0	150
		T40	60	60	60		180	150	40	190
		T80	60	60	60		180	150	80	230
		T120	60	60	60		180	150	120	270
		T160	60	60	60		180	150	160	310
	DF	N0	60	40	40		140	0	0	0
		T0	60	40	40		140	150	0	150
		T40	60	40	40		140	150	40	190
		T80	60	40	40		140	150	80	230
		T120	60	40	40		140	150	120	270
		T160	60	40	40		140	150	160	310

FB, flood irrigation and broadcast fertilizer; DP, drip fertigation; WS, wintering stage; JS, jointing stage; BS, booting stage; FS, filling stage; PS, pre-sowing.

Figure legend

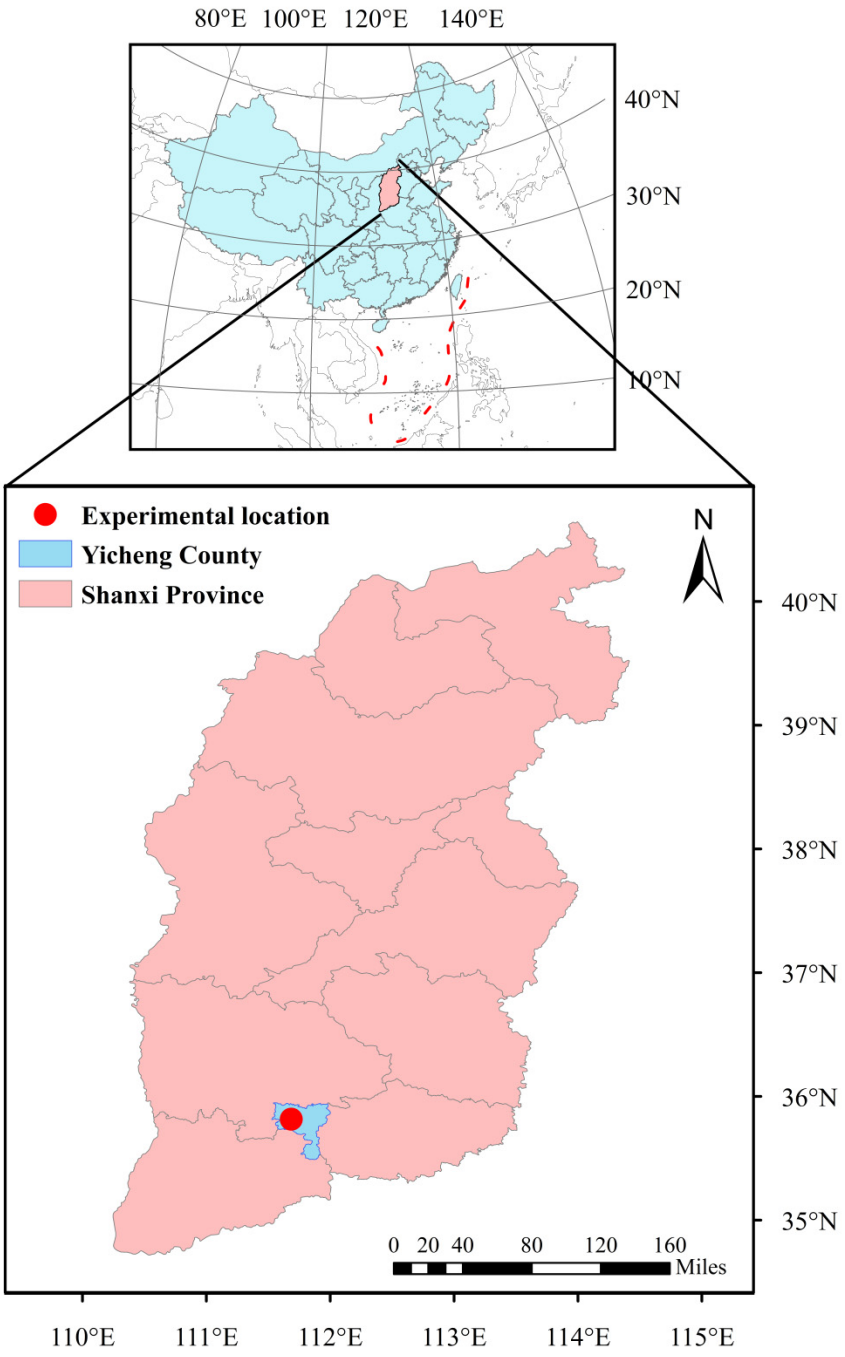


Figure S1. The location of the experiment site (Yicheng, Shanxi Province) in north China.

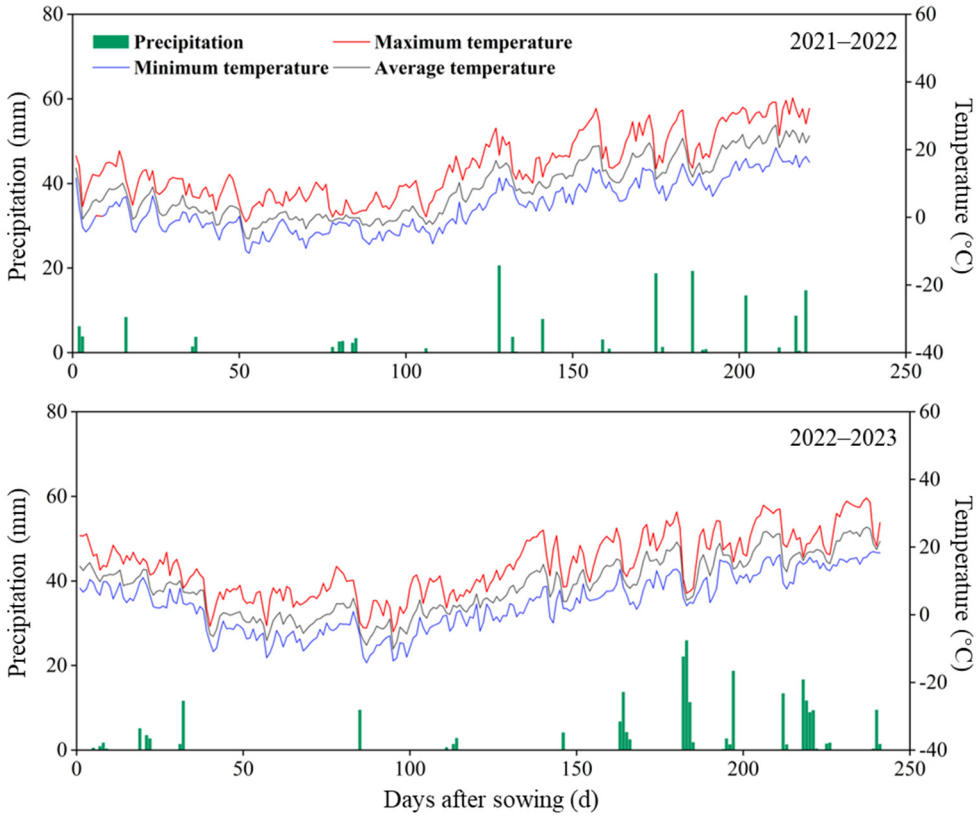


Figure S2. Precipitation and air temperature in the 2021–2022 and 2022–2023 growing seasons.

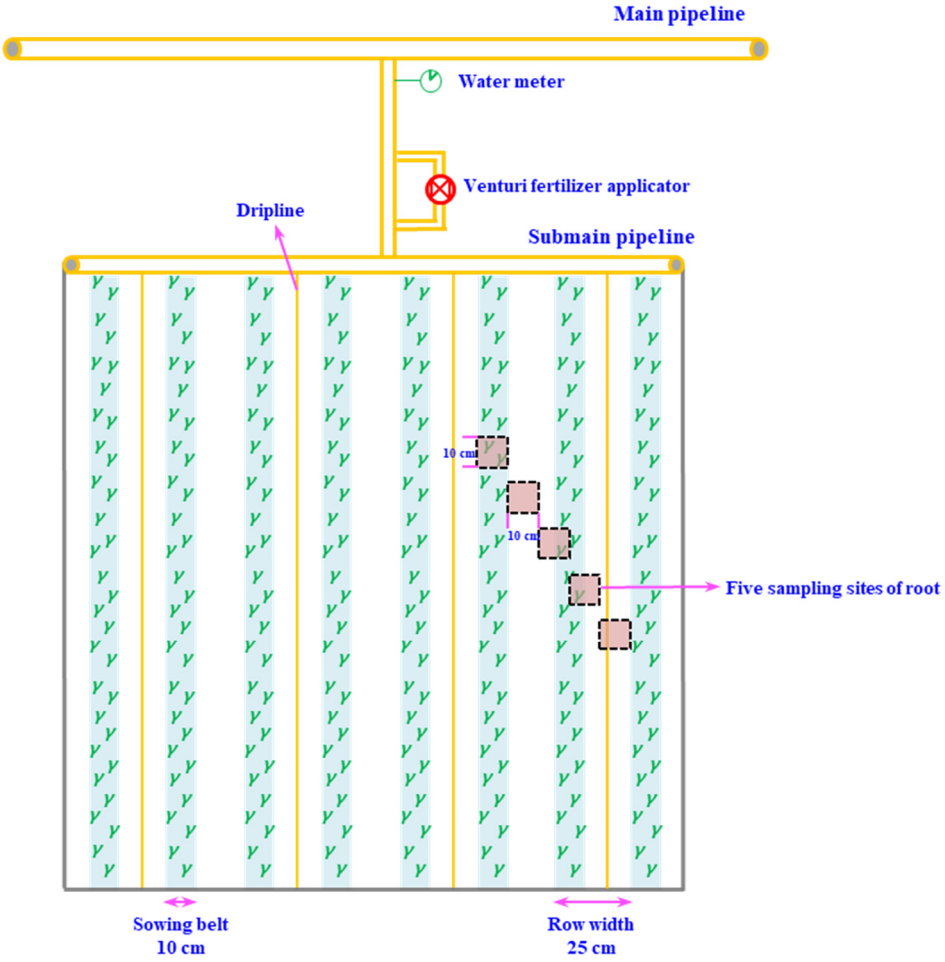


Figure S3. The schematic diagram of drip irrigation in the field and root sampling.