Table S1. The mean daily temperature (Tmean), minimum temperature (Tmin), maximum temperature (Tmax), sunshine duration, and solar radiation in response to sowing date treatments in 2023 and 2024.

Year	Growth Period	Sowing Date Treatment	T_{mean}	T_{max}	T_{min}	Sunshine Duration	Solar Radiation	Rainfall
			℃	℃	℃	H/Day	$MJ/m^2\ D^{-1}$	mm
2024	TP-PI	S1	27.8	32.3	23.8	5.8	15.8	319.7
		S2	29.3	33.6	25.8	5.9	15.9	407.8
		S3	29.7	34.8	25.9	7.6	17.7	370.51
	PI-FL	S1	29.4	34.7	25.6	7.2	17.0	242.0
		S2	28.9	33.8	25.5	6.6	15.5	43.0
		S3	24.0	28.9	20.4	5.2	12.5	77.8
	FL-MT	S1	23.2	28.4	19.6	5.6	12.9	113.4
		S2	20.0	25.1	16.3	4.6	10.8	141.7
		S3	16.9	22.4	12.8	5.1	10.3	140.4
2023	TP-PI	S1	27.5	31.9	24.0	5.6	15.2	306.5
		S2	29.3	33.6	26.0	6.1	15.6	218.3
		S3	28.8	33.5	26.4	7.9	18.0	261.5
	PI-FL	S1	29.4	33.0	24.9	7.2	16.7	120.7
		S2	27.4	32.1	25.0	6.7	14.9	122.1
		S3	23.7	28.0	20.8	5.5	12.1	89.6
	FL-MT	S1	23.7	27.8	18.6	5.5	13.1	114.4
		S2	19.8	25.1	16.1	4.4	10.8	153.3
		S3	16.7	21.2	12.8	5.2	10.4	169.6

Table S2. List of abbreviations and their definitions used in this study.

Abbreviation	Full Term
SGs	Secondary-branch (inferior) grains
PGs	Primary-branch (superior) grains
GY(Calculated)	Grain yield calculated using the equation in this article
GY(Actual)	Grain yield actually harvested in the field
GY(Theoretical)	Theoretical grain yield
GW(Calculated)	Grain weight calculated using the equation in this article
GW(Apparent)	Grain weight actually measured by the grains harvested in the field
GW(SG)	Grain weight of grains located in secondary branches
GW(PG)	Grain weight of grains located in primary branches
SSR(Apparent)	Seed-setting rate measured by the grains harvested in the field
SSR(SG)	Seed-setting rate of grains located in secondary branches
SSR(PG)	Seed-setting rate of grains located in primary branches
Ratio-SG	Ratio of grains located in secondary branches on main stem (SG%)
Ratio-PG	Ratio of grains located in primary branches on main stem (PG%)
NoS	Number of spikelets per panicle
NoP	Panicle number per unit area
CV	Coefficient of variation
PCA	Principal component analysis
SD	Standard deviation
Tmean	Mean daily temperature
Tmax	Maximum daily temperature
Tmin	Minimum daily temperature
TP	Transplanting stage
PI	Panicle initiation stage
FL	Flowering stage
MT	Maturity stage
MS	Main stem
PT	Primary tiller
ST	Secondary tiller
TT	Tertiary tiller
BFD	Before flowering duration
LS	Late sowing
ES	Early sowing
ET	Early tiller
LT	Late tiller