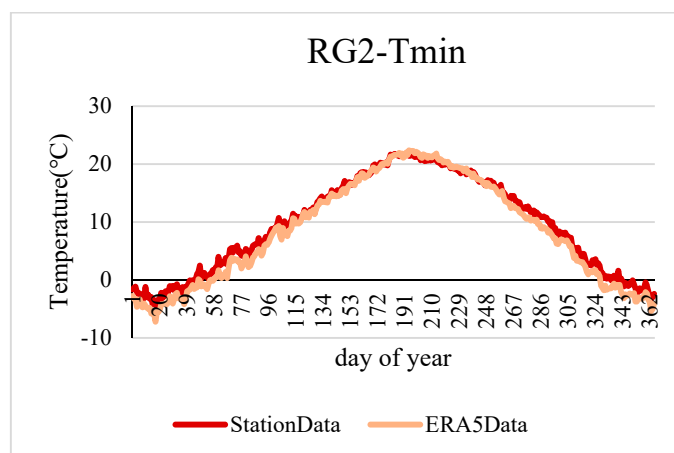
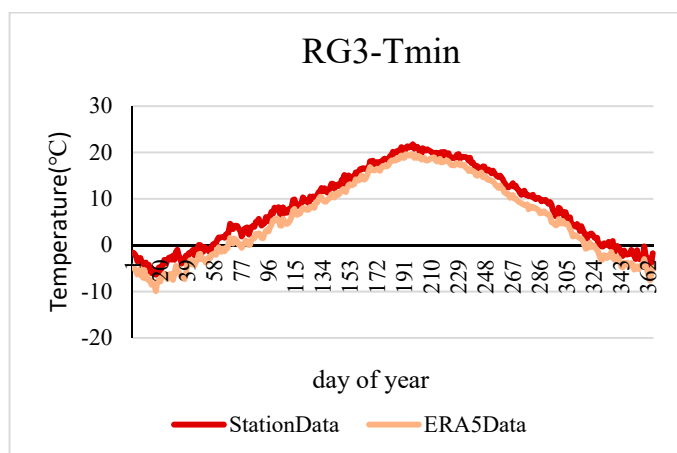
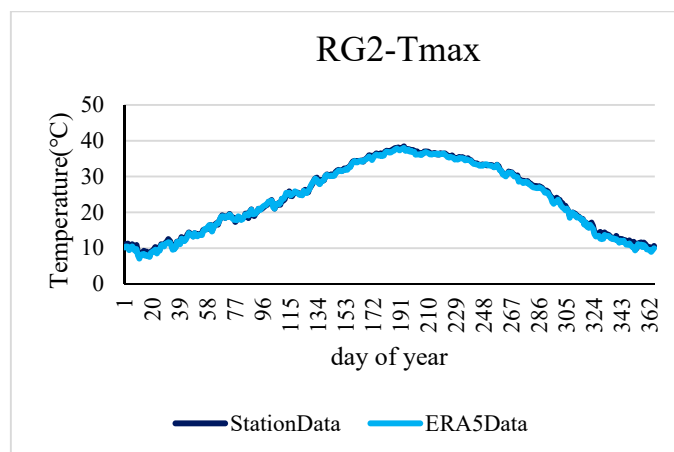
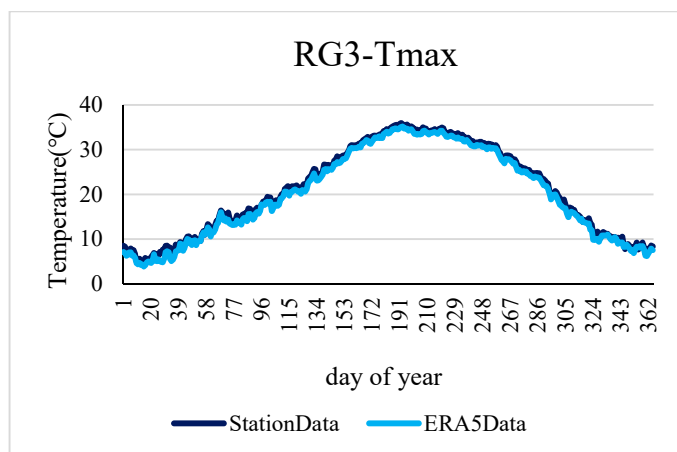


Supplementary

S1: Average and SD amount of soil properties in four studied regions (Isfahan-Borkhar (RG1), Falavarjan (RG2), Golpayegan (RG3) and Fereydan (RG4))

	Profile	Clay (%)		Silt (%)		Coarse fraction (%)		Organic carbon (%)	
		Average	SD	Average	SD	Average	SD	Average	SD
RG1	Pr1	27.34	11.56	31.86	14.58	26.28	15.23	0.50	0.69
	Pr2	27.17	11.64	31.61	14.55	26.16	15.17	0.49	0.67
	Pr3	27.35	11.54	31.95	14.54	26.30	15.18	0.50	0.68
	Average	27.29		31.81		26.25		0.50	
RG2	Pr1	27.91	9.95	31.57	12.98	25.17	12.83	0.64	0.77
	Pr2	27.76	10.14	31.93	12.75	25.58	13.13	0.64	0.79
	Pr3	27.65	10.15	31.57	12.84	25.67	13.36	0.65	0.79
	Average	27.77		31.69		25.47		0.64	
RG3	Pr1	27.41	9.77	35.36	13.79	29.13	15.2	0.63	0.87
	Pr2	27.63	9.6	35.83	13.29	29.02	15.01	0.65	0.86
	Pr3	27.45	9.72	35.87	13.45	29.03	14.92	0.64	0.86
	Average	27.50		35.69		29.06		0.64	
RG4	Pr1	29.85	10.13	35.81	13.28	27.66	14.35	0.84	0.85
	Pr2	29.99	10.07	35.73	13.15	27.80	14.37	0.83	0.85
	Pr3	29.93	10.02	35.75	13.18	27.56	14.31	0.83	0.85
	Average	29.92		35.76		27.67		0.83	



S2: Comparison of maximum and minimum temperatures between nearest station data and ERA5 data in regions RG2 and RG3 throughout the year

S3: Maximum, minimum temperature and precipitation over the crop growth season on the planting date of 18 May (PD1), 18 June (PD2) and 8 July (PD3) in four studied regions (Isfahan-Borkhar (RG1), Falavarjan (RG2), Golpayegan (RG3) and Fereydan (RG4))

Planting Date	Regions	Parameter			
		Tmax	Tmin	PRCP	SeasonLength
		(°C)	(°C)	(mm)	(day)
PD-1	RG1	33.2 ± 0.4	18.5 ± 0.3	3.9 ± 3.0	94 ± 2

	RG2	32.8 ± 0.4	18.1 ± 0.4	2.9 ± 2.8	95 ± 2
	RG3	30.2 ± 0.5	16.0 ± 0.4	13.1 ± 10.1	108 ± 5
	RG4	27.2 ± 0.6	14.2 ± 0.4	22.7 ± 15.0	126 ± 5
PD-2	RG1	33.3 ± 0.7	18.7 ± 0.5	2.5 ± 3.1	96 ± 4
	RG2	32.9 ± 0.7	18.4 ± 0.5	2.1 ± 3.1	97 ± 4
	RG3	28.8 ± 1.1	14.6 ± 0.9	15.0 ± 14.2	126 ± 11
	RG4	25.1 ± 0.7	12.4 ± 0.4	42.8 ± 34.2	143 ± 5
PD-3	RG1	30.2 ± 1.0	15.6 ± 0.8	6.1 ± 7.6	116 ± 6
	RG2	29.5 ± 1.1	14.8 ± 0.8	6.2 ± 7.7	121 ± 7
	RG3	26.2 ± 0.8	12.3 ± 0.6	28.3 ± 21.7	129 ± 7
	RG4	24.8 ± 0.6	12.2 ± 0.4	34.1 ± 26.3	125 ± 6

S4: Result of ANOVA analysis for soil and weather indexes and their interaction on the planting date of 18 May (PD1), 18 June (PD2) and 8 July (PD3) in four studied regions (Isfahan-Borkhar (RG1), Falavarjan (RG2), Golpayegan (RG3) and Fereydan (RG4))

Regions	RG1			RG2			RG3			RG4		
Planting Date	PD-1	PD-2	PD-3	PD-1	PD-2	PD-3	PD-1	PD-2	PD-3	PD-1	PD-2	PD-3
soil	1.00 ^{ns}	1.00 ^{ns}	.999 ^{ns}	.998 ^{ns}	.999 ^{ns}	1.00 ^{ns}	.977 ^{ns}	.944 ^{ns}	.929 ^{ns}	.977 ^{ns}	.801 ^{ns}	.944 ^{ns}
weather	.998 ^{ns}	.987 ^{ns}	.995 ^{ns}	.912 ^{ns}	.982 ^{ns}	.907 ^{ns}	.94 ^{ns}	.883 ^{ns}	.496 ^{ns}	.681 ^{ns}	.330 ^{ns}	.496 ^{ns}
soil * weather	1.00 ^{ns}	1.00 ^{ns}	1.00 ^{ns}	1.00 ^{ns}	1.00 ^{ns}	1.00 ^{ns}	1.00 ^{ns}	1.00 ^{ns}	1.000 ^{ns}	1.00 ^{ns}	1.00 ^{ns}	1.00 ^{ns}