

Table S1. Mean values of morphological and chemical parameters of irrigation treatments (T1, T2, T3 and T4) for 3 years (2017, 2018 and 2019).

	T1	T2	T3	T4
Agronomic parameters				
SWP	-1.50±0.07	-2.02±0.04	-2.13±0.09	-2.03±0.08
SI (MPa × day)	44.3±7.05	87.2±10.9	114±18.2	103±18.2
AW (mm)	691±108	382±58.6	114±3.66	114±5.68
KY (kg ha ⁻¹)	1807±371	1269±320	1088±263	1175±252
KR (%)	31.9±0.41	31.0±0.46	30.8±0.35	31.1±0.46
DW (%)	96.7±0.20	96.5±0.27	96.6±0.19	96.6±0.21
a _w	0.54±0.01	0.52±0.01	0.52±0.01	0.51±0.01
Morphological parameters				
Awe (g)	4.51±0.13	4.53±0.14	4.47±0.10	4.56±0.15
KWe (g)	1.44±0.03	1.41±0.04	1.38±0.02	1.41±0.03
SHWe (g)	3.07±0.11	3.12±0.11	3.10±0.08	3.14±0.12
AL (mm)	33.4±0.61	33.7±0.59	33.6±0.57	34.0±0.40
KL (mm)	25.7±0.31	25.6±0.42	25.4±0.23	25.6±0.34
AWi (mm)	23.9±0.38	24.0±0.40	24.0±0.39	24.5±0.43
KWi (mm)	16.1±0.21	16.0±0.26	15.8±0.17	16.0±0.26
ATi (mm)	15.6±0.13	15.4±0.14	15.3±0.13	15.4±0.17
KTi (mm)	8.50±0.13	8.27±0.10	8.09±0.08	8.25±0.07
L*	45.8±0.39	46.1±0.50	45.8±0.45	46.2±0.44
a*	16.8±0.21	17.0±0.29	17.0±0.33	17.2±0.31
b*	31.0±0.49	31.4±0.62	30.9±0.47	31.8±0.61
Hue	44.1±3.62	44.1±3.55	43.8±3.64	44.6±3.56
C	52.7±3.88	53.1±3.79	52.7±3.73	53.1±3.72
H (N)	71.7±1.81	72.8±2.01	73.8±2.09	71.9±1.94
Chemical parameters				
Minerals (mg kg ⁻¹)				
Ca	3463±423	3369±500	3025±513	3392±395
Mg	2128±70.2	1986±50.2	2011±49.0	2007±50.8
K	6869±198	7224±270	7452±262	6555±266
Fe	22.8±1.67	25.0±1.72	28.0±1.97	26.3±1.50
Cu	10.0±0.39	10.4±0.40	10.5±0.42	11.1±0.61
Mn	20.9±1.75	20.0±1.85	19.9±1.66	20.6±1.91
Zn	39.2±1.87	42.3±0.96	44.5±1.58	40.2±1.31
Organic acids (g kg ⁻¹)				
Cit	2.23±0.05	2.37±0.06	2.39±0.07	2.34±0.09
Tar	1.32±0.09	1.33±0.10	1.27±0.09	1.25±0.09
Mal	6.97±0.58	6.78±0.67	7.54±0.92	8.58±1.18
ΣOA	10.5±0.52	10.4±0.56	11.1±0.86	12.2±1.08
Sugars (g kg ⁻¹)				
Suc	30.0±0.49	33.6±0.76	35.2±1.37	34.3±1.50
Glu	13.3±0.46	13.7±0.55	11.9±1.20	10.9±1.15
Fru	4.58±0.28	5.27±0.40	5.85±0.43	6.15±0.26
ΣS	49.9±0.78	52.5±1.14	52.9±2.28	51.3±1.96

T1=full irrigated; T2=moderate RDI; T3=severe RDI; SDI=sustained deficit irrigation; AWe=almond weight; KWe=kernel weight; SHWe=shell weight; AL=almond length; KL=kernel length; AWi=almond width; KWi=kernel width; ATi=almond thickness; KTi=kernel thickness; L^* , a^* , b^* =color coordinates; C=Chroma; H=hardness; Cit=citric; Tar=tartaric; Mal=malic; Σ OA=total organic acids; Suc=sucrose; Glu=glucose; Fru=fructose; Σ S=total sugars.

Table S2. Mean values of functional and sensorial parameters of irrigation treatments (T1, T2, T3 and T4) for 3 years (2017, 2018 and 2019).

	T1	T2	T3	T4
Functional parameters				
Antioxidant activity (mmol Trolox kg ⁻¹) and total phenolic content (g GAE kg ⁻¹)				
ABTS••K	8.27±0.32	9.14±0.37	9.32±0.54	9.73±0.30
DPPH•K	36.2±2.22	38.2±2.25	37.9±2.61	37.6±2.69
FRAPK	3.06±0.68	3.38±0.59	3.31±0.29	4.22±0.32
TPC K	2.78±0.50	3.09±0.60	3.14±0.58	3.06±0.52
ABTS••S	55.4±4.80	65.9±6.47	60.0±6.42	58.0±6.43
DPPH•S	102±15.1	99.3±14.2	96.7±13.4	102±14.1
FRAP S	70.9±4.85	86.3±5.50	78.8±5.37	73.4±6.58
TPC S	29.3±3.59	30.7±3.90	29.3±3.48	27.4±3.54
Fatty acids (%)				
C14:0	0.039±0.003	0.040±0.003	0.040±0.004	0.040±0.003
C16:0	8.16±0.28	8.31±0.29	8.53±0.30	8.28±0.28
C16:1	0.56±0.04	0.59±0.05	0.58±0.05	0.58±0.04
C17:0	0.10±0.01	0.11±0.01	0.11±0.01	0.11±0.01
C17:1	0.14±0.02	0.15±0.01	0.15±0.01	0.15±0.01
C18:0	2.72±0.18	2.94±0.21	2.88±0.19	2.89±0.20
C18:1n9	62.9±1.67	61.7±1.74	61.3±1.91	61.8±1.80
C18:1n7	3.59±0.53	3.76±0.58	3.65±0.53	3.66±0.54
C18:2	22.2±0.42	23.0±0.47	23.3±0.59	23.0±0.50
O/L	2.85±0.13	2.71±0.13	2.68±0.15	2.72±0.13
SFA	11.2±0.44	11.6±0.48	11.6±0.47	11.5±0.46
MUFA	66.2±0.90	65.1±0.94	64.7±1.12	65.1±1.00
PUFA	22.4±0.42	23.1±0.47	23.4±0.29	23.1±0.50
PUFA/SFA	2.02±0.05	2.02±0.05	2.03±0.04	2.03±0.05
PUFA/MUFA	0.34±0.01	0.36±0.01	0.37±0.02	0.36±0.01
Descriptive sensory analysis				
Color	2.94±0.44	2.97±0.61	2.67±0.40	2.41±0.58
Size	7.88±0.32	8.01±0.25	7.24±0.39	7.23±0.39
Sweetness	3.51±0.07	3.72±0.08	3.92±0.13	3.49±0.22
Bitterness	0.43±0.07	0.41±0.07	0.40±0.05	0.34±0.05
Astringency	0.59±0.04	0.65±0.01	0.53±0.02	0.48±0.07
Nutty	5.79±0.18	5.85±0.16	5.95±0.14	5.56±0.18
Almond ID	6.37±0.15	6.37±0.15	6.57±0.12	6.26±0.14
Benzaldehyde like	0.49±0.04	0.42±0.04	0.40±0.06	0.39±0.07
Woody	2.06±0.34	1.82±0.30	1.89±0.32	1.96±0.29
Hardness	5.57±0.32	5.85±0.20	6.00±0.12	6.13±0.10
Crispiness	5.13±0.82	5.77±0.85	5.37±0.85	5.44±0.87

Aftertaste	6.08±0.21	6.33±0.25	6.44±0.14	6.35±0.15
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T1=full irrigated; T2=moderate RDI; T3=severe RDI; SDI=sustained deficit irrigation; ABTS^{•+}=2,2-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid); DPPH[•]=(2,2-diphenyl-1-picrylhydrazyl); FRAP=ferric reducing ability of plasma; TPC=Total Phenolic Content; K=kernel; S=skin; C14=(myristic), C16:0 (palmitic), C16:1 (palmitoleic), C17:0 (margaric), C17:1 cis (heptadecenoic), C18:0 (stearic), C18:1n9 (oleic), C18:1n7 (cis-vaccenic), C18:2n6 c9,12 (linoleic), O/L (oleic/linoleic), SFA (Saturated Fatty Acids), MUFA (Monounsaturated Fatty Acids), PUFA (Polyunsaturated Fatty Acids).