

Figure S1. (A) Precipitation and temperature variation (B) from 2019-2022 in Changsha/Zhuzhou district.

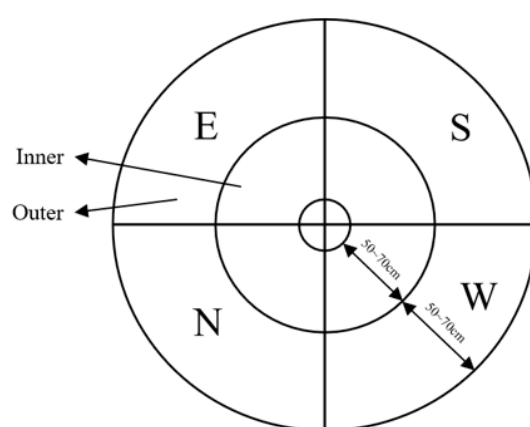


Figure S2. Vertical view of canopy partitioning. (N, north; W, west; S, south; E, east;).

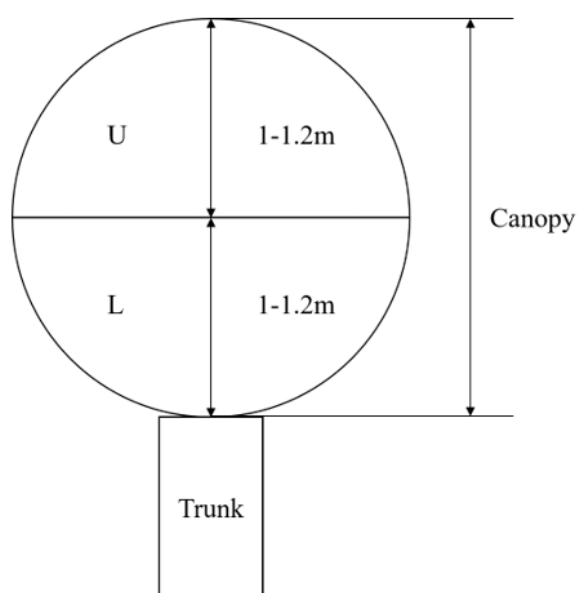


Figure S3. Side view of canopy partitioning. (U, upper layer; L, lower layer).

Table S1. Changes of lateral diameter and longitudinal diameter.

Period	Position	Lateral Diameter/mm	Longitudinal Diameter/mm	Fruits Shape Index
May	UO	17.76 ± 2.38	16.88 ± 1.65	0.93 ± 0.01
	UI	17.66 ± 1.96	16.68 ± 1.46	0.93 ± 0.03
	LO	18.70 ± 1.97	17.41 ± 0.77	0.91 ± 0.03
	LI	16.22 ± 2.38	15.16 ± 1.78	0.92 ± 0.04
Jun	UO	26.13 ± 5.29	24.31 ± 5.12	0.93 ± 0.01
	UI	25.46 ± 4.73	23.48 ± 3.70	0.93 ± 0.03
	LO	27.19 ± 5.57	24.93 ± 5.14	0.92 ± 0.02
	LI	22.70 ± 3.86	21.51 ± 4.21	0.94 ± 0.03
Jul	UO	40.52 ± 2.60	36.08 ± 1.73	0.89 ± 0.03
	UI	38.14 ± 4.13	34.54 ± 2.27	0.91 ± 0.04
	LO	39.34 ± 5.13	34.15 ± 4.51	0.87 ± 0.01
	LI	31.95 ± 8.47	27.97 ± 6.98	0.88 ± 0.02
Aug	UO	45.91 ± 0.86	39.29 ± 0.33	0.86 ± 0.01
	UI	44.01 ± 2.51	36.69 ± 2.05	0.84 ± 0.01
	LO	46.39 ± 1.85	39.39 ± 2.16	0.85 ± 0.02
	LI	41.19 ± 3.28	34.61 ± 3.75	0.84 ± 0.02
Sep	UO	46.50 ± 0.41	39.86 ± 0.12	0.86 ± 0.01
	UI	44.46 ± 1.02	37.30 ± 0.48	0.84 ± 0.02
	LO	47.25 ± 1.25	39.54 ± 0.32	0.84 ± 0.02
	LI	45.16 ± 1.06	37.27 ± 0.29	0.83 ± 0.02
Oct	UO	47.34 ± 0.48	39.65 ± 0.63	0.84 ± 0.01
	UI	44.85 ± 2.10	38.89 ± 1.11	0.87 ± 0.06
	LO	48.23 ± 1.15	40.51 ± 1.23	0.84 ± 0.02
	LI	44.54 ± 2.28	38.22 ± 1.09	0.86 ± 0.05

Table S2. Fruit development phenotypic traits of *C. oleifera* ‘Huaxin’.

Position	Period	Fruit weight (FW)/g	Fresh seed content (FSC)/%	Fresh seed kernel content (FKC)/%	Dry seed content (DSC)/%	Dry seed kernel content (DKC)/%
UO	May	3.50 ± 1.29	-	-	-	-
	Jun	10.93 ± 6.45	25.43 ± 12.63	-	12.05 ± 7.19	-
	Jul	33.71 ± 4.45	51.82 ± 14.67	35 ± 4.62	43.31 ± 13.92	15.09 ± 5.16
	Aug	46.44 ± 1.45	60.83 ± 8.01	36.91 ± 2.17	61.34 ± 7.36	22.40 ± 5.25
	Sep	49.31 ± 1.10	59.56 ± 4.82	42.53 ± 3.25	67.76 ± 8.33	26.33 ± 6.03
	Oct	48.95 ± 3.35	63.78 ± 3.06	46.59 ± 3.91	75.77 ± 3.66	40.22 ± 6.54
UI	May	3.41 ± 1.15	-	-	-	-
	Jun	9.86 ± 5.22	24.60 ± 11.51	-	11.77 ± 6.41	-
	July	28.74 ± 7.42	49.14 ± 17.98	34.79 ± 2.27	41.90 ± 17.42	15.05 ± 5.81
	Aug	41.43 ± 5.00	57.25 ± 2.78	35.75 ± 0.75	56.92 ± 3.61	20.29 ± 2.81
	Sep	43.73 ± 2.44	57.72 ± 3.49	41.07 ± 0.55	65.03 ± 7.30	24.01 ± 5.17
	Oct	45.92 ± 3.86	62.19 ± 2.14	46.23 ± 2.00	73.55 ± 3.23	38.30 ± 5.84
LO	May	3.87 ± 1.10	-	-	-	-
	Jun	12.14 ± 7.66	28.89 ± 15.79	-	13.79 ± 8.21	-
	July	30.96 ± 10.46	49.96 ± 18.76	34.71 ± 1.15	50.14 ± 26.52	16.91 ± 9.91
	Aug	46.99 ± 3.59	61.45 ± 9.82	36.17 ± 1.09	62.89 ± 7.13	22.48 ± 5.87
	Sep	50.43 ± 3.67	61.66 ± 6.72	42.43 ± 5.02	70.25 ± 9.04	27.66 ± 5.49
	Oct	54.58 ± 2.61	61.86 ± 5.11	47.31 ± 0.96	74.63 ± 4.79	39.59 ± 4.85

LI	May	2.63 ± 0.93	-	-	-	-
	Jun	7.43 ± 3.97	22.39 ± 8.44	-	10.35 ± 5.67	-
	Jul	17.93 ± 10.57	41.47 ± 14.02	33.99 ± 1.15	39.83 ± 25.61	13.56 ± 9.34
	Aug	32.43 ± 5.43	55.73 ± 5.07	34.79 ± 2.62	57.73 ± 0.52	21.54 ± 2.88
	Sep	40.03 ± 1.83	57.99 ± 3.23	41.59 ± 3.47	68.23 ± 6.20	25.60 ± 4.19
	Oct	41.98 ± 2.89	63.57 ± 2.68	46.20 ± 3.68	74.57 ± 2.09	35.75 ± 7.65