Supplementary Materials

Table S1 Overview of transcriptomic sequencing in tea leaves

Sample	Raw Reads	Raw bases	Clean Reads	Clean Base(G)	Error Rate(%)
MC-1	43512646	6.52	42172184	6.33	0.03
MC-2	41245880	6.18	40066860	6.01	0.03
MC-3	43004222	6.45	41740838	6.26	0.03
MP-1	38908256	5.83	37648946	5.65	0.03
MP-2	40024568	6.00	39034110	5.86	0.03
MP-3	44819000	6.72	43317594	6.50	0.03
Total/Average	251514572	6.28	243980532	6.10	0.03

Note: MC: Tea tree unpruned; MP: Tea tree pruned

Table S2 Efficiency statistics of transcriptome data compared with reference genomes

Sample	Total reads	Total mapped	Multiple mapped	Uniquely mapped	Read-1 mapped	Read-2 mapped	Reads map to '+'	Reads map to '-'
MC-1	42172184	39770212 (94.3%)	2985238 (7.08%)	36784974 (87.23%)	18392487 (43.61%)	18392487 (43.61%)	18392487 (43.61%)	18392487 (43.61%)
MC-2	40066860	37828644 (94.41%)	2856432 (7.13%)	34972212 (87.28%)	17486106 (43.64%)	17486106 (43.64%)	17486106 (43.64%)	17486106 (43.64%)
MC-3	41740838	39367906 (94.32%)	2996280 (7.18%)	36371626 (87.14%)	18185813 (43.57%)	18185813 (43.57%)	18185813 (43.57%)	18185813 (43.57%)
MP-1	37648946	35519428 (94.34%)	2681390 (7.12%)	32838038 (87.22%)	16419019 (43.61%)	16419019 (43.61%)	16419019 (43.61%)	16419019 (43.61%)
MP-2	39034110	36804738 (94.29%)	2656414 (6.81%)	34148324 (87.48%)	17074162 (43.74%)	17074162 (43.74%)	17074162 (43.74%)	17074162 (43.74%)
MP-3	43317594	40750932 (94.07%)	3029678 (6.99%)	37721254 (87.08%)	18860627 (43.54%)	18860627 (43.54%)	18860627 (43.54%)	18860627 (43.54%)

Note: MC: Tea plant unpruned; MP: Tea plant pruned; The reference genome was GCF_004153795.1_AHAU_CSS_1_genomic.fna.gz. Download address: https://ftp.ncbi.nlm.nih.gov/genomes/all/GCF/004/153/795/GCF_004153795.1_AHAU_CSS_1/; **Total Reads**: Total number of clean reads; **Total mapped**: The number of reads compared to the reference genome; **Multi mapped**: The number of reads multiple compared to the reference genome; **Unique mapped**: The number of reads only compared to the reference genome; **Read-1 mapped**: Number of successes comparison in read1; **Read-2 mapped**: Number of successes comparison in read2; **Reads map to '+'**: Number of reads successfully comparison on the positive chain of the genome; **Reads map to '-':** Number of reads successfully comparison on the negative chain of the genome.

Table S3 Analysis of the growth and quality indicator of tea plant

	Index	MC	MP	Adjusted p-value
Growth index	Leaf area (cm^2)	21.64±0.48	28.77±0.30	< 0.05
	Hundred-bud weight (g）	107.90±2.23	151.70±5.71	< 0.05
	ChlorophyII content (SPAD)	35.37±0.32	38.10±0.69	< 0.05
	Yield (kg/ha)	189.33±4.04	350.00±3.00	< 0.05
Quality index	Tea polyphenol (mg/g)	15.84±0.36	16.33±0.42	0.19
	Theanine (mg/g)	1.29± 0.02	1.31±0.02	0.35
	Caffeine (mg/g)	2.99± 0.03	2.78±0.05	< 0.05
	Flavone (mg/g)	1.11± 0.01	0.97±0.02	< 0.05
	Free amino acid (mg/g)	4.25± 0.05	2.96±0.12	< 0.05
	Soluble sugar (mg/g)	3.46± 0.02	3.66±0.04	< 0.05

Note: MC: Tea plant unpruned; MP: Tea plant pruned.

Table S4 The basic conditions of tea plantation during the experiment

	Maximum temperature (°C)	Minimum temperature (°C)	Mean temperature (°C)	Number of sunny days (Day)	Precipitation days (Day)	Amount of precipitation (mm)	Relative humidity (%)	Pest and disease control
August 2021	35	23	27.7	13	18	194.5	79	
September 2021	36	20	27.4	21	9	13.6	71	
October 2021	33	11	20.9	17	14	35.6	73	
November 2021	23	3	14	18	12	77.3	76	The pest and disease control in tea plantation was based on organic pesticides, the main organic pesticides used were matrine and azadirachtin, each organic pesticide was used three times a year in March, September and October, two organic pesticides were used alternately, and the use time interval of 10 days.
December 2021	20	2	10	22	9	32.7	71	
January 2022	20	1	9.7	14	17	54.2	80	
February 2022	23	1	7.6	10	18	151	82	
March 2022	27	3	16.1	13	18	309.9	79	
April 2022	33	6	18	13	17	112.6	74	