Table S1. ANOVA of the particle compositions of cassava rhizosphere soil collected in 2019 and 2020, respectively.

Year	Factor	*df*	Clay		Silt		Sand	
			MS	*P*	*MS*	*P*	*MS*	*P*
2019	Tillage (T)	1	120.15	***	100.29	***	0.90	ns
	Nitrogen (N)	3	70.77	***	36.88	***	52.55	***
	T × N	3	9.15	***	17.93	*	3.12	ns
2020	T	1	21.60	***	116.33	**	37.67	ns
	N	3	76.90	***	134.14	***	36.56	*
	T × N	3	32.00	***	37.22	*	6.41	ns

Note: *df* represents degree of freedom; *MS* represents mean square; *P* stands for significance level; $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, ns represents insignificant difference.

Table S2. Characterisation of rhizosphere soil physicochemical properties in 2019 and 2020.

Year	Treatment		pH	Organic matter (g·kg^{-1})	Available nitrogen (mg·kg^{-1})	Available potassium (mg·kg^{-1})	Available phosphorus (mg·kg^{-1})	Urease (mg·g^{-1}·d^{-1})
	Tillage method	N rate						
2019	Conventional tillage (CT)	0% N	5.38 ± 0.03d	19.56 ± 2.09a	84.49 ± 1.33c	404.62 ± 4.44d	78.38 ± 1.81c	0.16 ± 0.04b
		25% N	5.30 ± 0.01e	18.19 ± 3.00a	82.52 ± 2.84c	215.21 ± 3.40f	73.21 ± 2.73c	0.26 ± 0.06ab
		50% N	5.25 ± 0.06e	17.88 ± 1.97a	96.67 ± 6.03b	306.98 ± 3.79e	91.72 ± 3.55ab	0.22 ± 0.04ab
		100% N	5.27 ± 0.03e	18.05 ± 2.52a	84.19 ± 1.63c	214.64 ± 3.64f	90.30 ± 4.18ab	0.27 ± 0.04ab
	Fen-long tillage (FLT)	0% N	5.68 ± 0.03a	17.95 ± 2.06a	83.65 ± 1.02c	450.66 ± 4.40b	85.18 ± 2.63b	0.29 ± 0.08ab
		25% N	5.63 ± 0.01ab	18.72 ± 2.13a	87.77 ± 1.02c	410.88 ± 4.20cd	94.01 ± 2.49a	0.23 ± 0.03ab
		50% N	5.60 ± 0.06b	17.87 ± 2.16a	105.63 ± 7.24a	415.30 ± 5.17c	88.80 ± 5.14ab	0.30 ± 0.13a
		100% N	5.49 ± 0.01c	16.62 ± 1.27a	87.04 ± 0.90c	465.72 ± 3.22a	95.50 ± 6.12a	0.27 ± 0.06ab
2020	CT	0% N	5.81 ± 0.11bc	8.90 ± 0.53bc	85.28 ± 8.19ab	471.12 ± 2.84a	70.53 ± 9.18a	0.47 ± 0.02bcd
		25% N	6.03 ± 0.03a	8.82 ± 0.55bc	78.17 ± 2.74bc	302.07 ± 2.35d	50.34 ± 6.19d	0.45 ± 0.03cd
		50% N	5.89 ± 0.04b	8.67 ± 0.89bc	89.67 ± 8.12a	309.66 ± 0.37d	47.55 ± 1.23d	0.49 ± 0.02abc
		100% N	6.02 ± 0.03a	9.29 ± 0.65abc	82.16 ± 1.17abc	306.57 ± 2.30d	54.37 ± 3.53cd	0.51 ± 0.06ab
	FLT	0% N	6.01 ± 0.03a	10.06 ± 0.43a	77.42 ± 3.22bc	475.20 ± 1.91a	64.92 ± 1.65ab	0.53 ± 0.01a
		25% N	6.09 ± 0.01a	8.30 ± 0.59c	76.84 ± 10.5bc	489.82 ± 4.48a	61.13 ± 0.90bc	0.47 ± 0.02bcd
		50% N	5.82 ± 0.03bc	8.36 ± 0.31c	73.43 ± 3.44c	348.42 ± 27.71c	60.75 ± 2.50bc	0.42 ± 0.02d
		100% N	5.75 ± 0.03c	9.62 ± 0.51ab	77.71 ± 0.57bc	440.99 ± 6.60b	59.36 ± 1.85bc	0.50 ± 0.01abc
Paired *t*-test of 2019 (CT vs. FLT)		T-value	-16.236	0.812	-3.305	-2.699	-6.320	-1.551
		df	11	11	11	11	11	11
		p	***	ns	**	*	***	ns
Paired *t*-test of 2020 (CT vs. FLT)		T-value	0.372	-0.581	3.030	-2.218	-4.075	0.129
		df	11	11	11	11	11	11
		p	ns	ns	*	*	*	ns

Note: The groups were expressed as mean ± SD, n = 7; different letters indicate significant differences among soil types (adjusted $P < 0.05$); $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, and ns represents no significant difference.

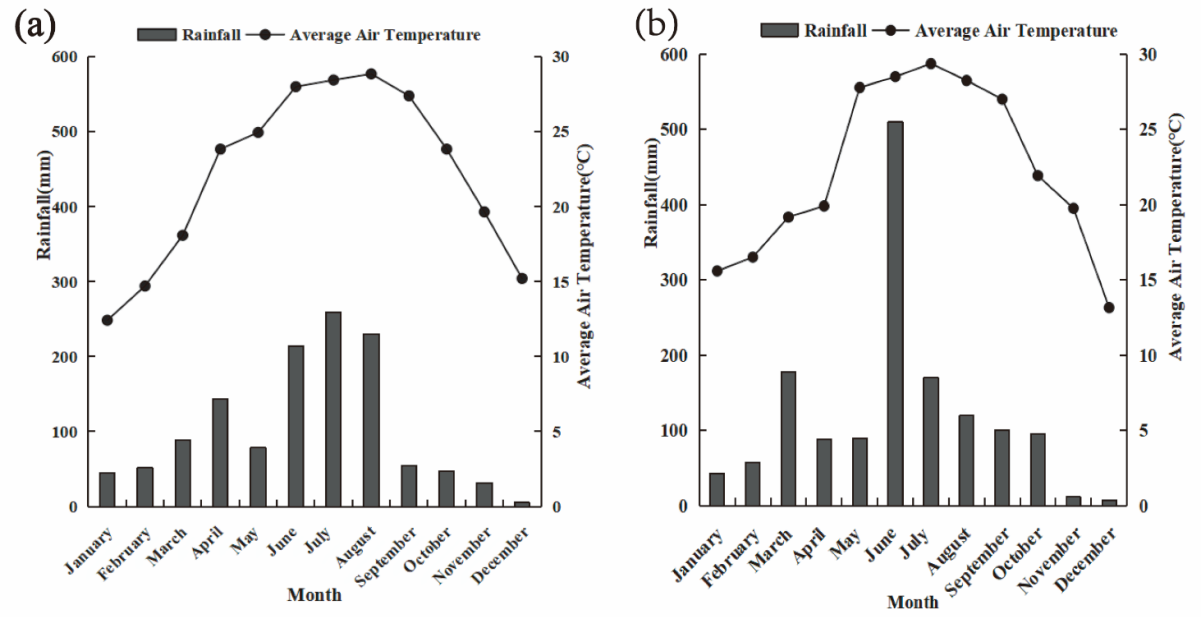


Figure S1. Monthly rainfall and average air temperature in 2019 (a) and 2020 (b).

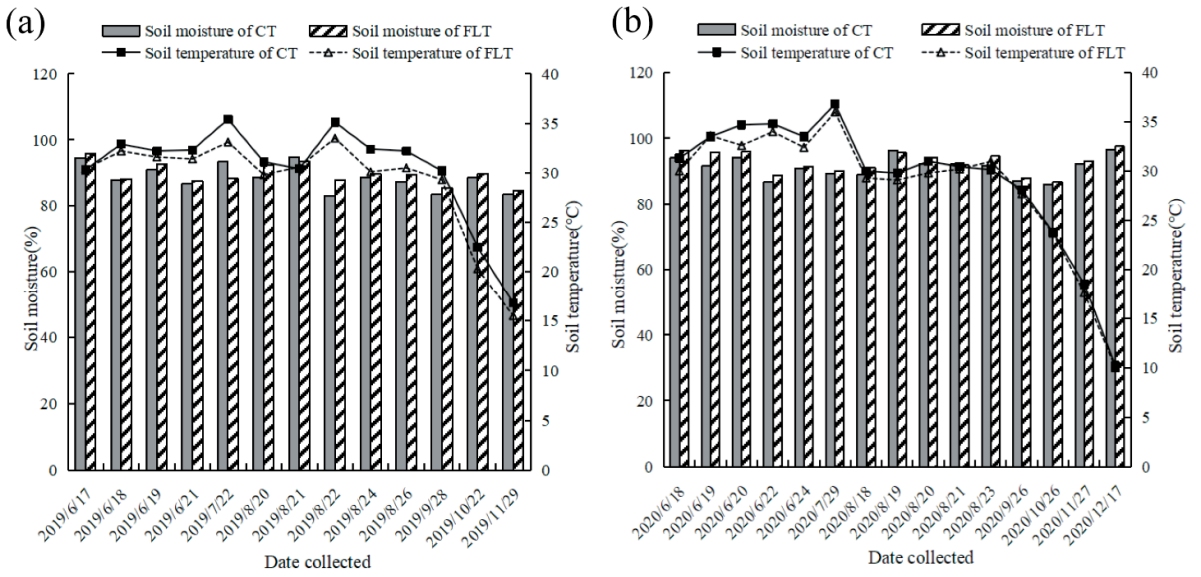


Figure S2. Soil moisture and temperature in 2019 (a) and 2020 (b).

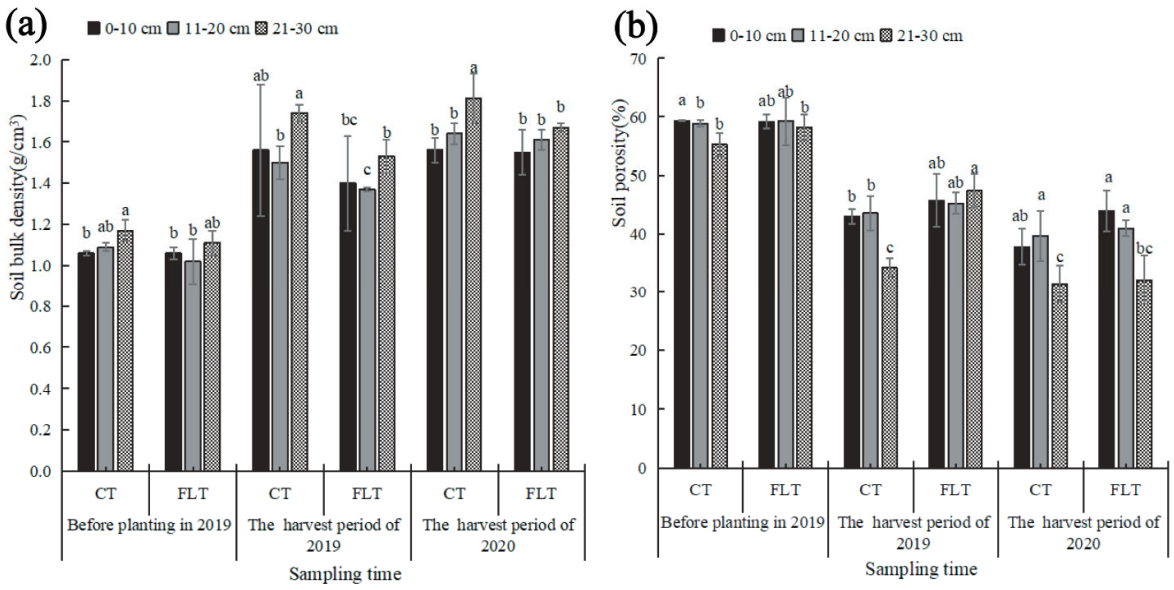


Figure S3. Soil bulk density (a) and porosity (b) at different sampling times.

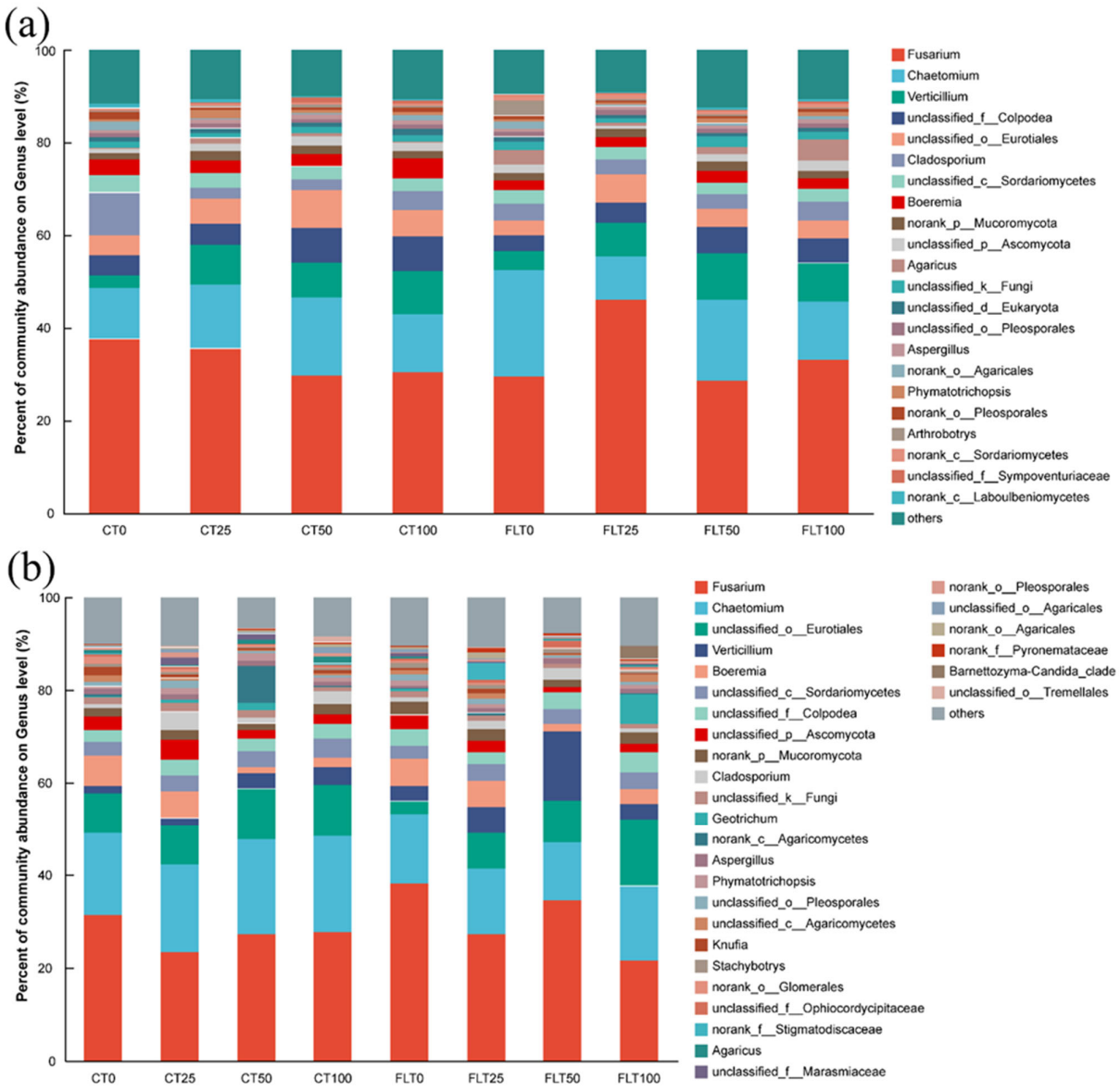


Figure S4. Relative abundances of the dominant fungal genera of cassava rhizosphere soil collected in 2019 (a) and 2020 (b), respectively. Different colours were used to represent the relative abundance of fungal genera with a relative abundance greater than 1%. "CT0, 25, 50, and 100" represent "0, 25%, 50%, and 100% N of conventional tillage", respectively. "FLT0, 25, 50, and 100" represent "0, 25%, 50%, and 100% N of fen-long tillage", respectively.