Supplementary Data

Table S1. Effects of reducing different doses of fertilizers before harvest on aromatic compounds in pepper fruit.

Aromatic content ($\mu g \cdot kg^{-1}$)	Substance number	Treatment				
		CK	T1	T2	T3	T4
3-Pentanone	A	39.14±5.00a	36.34±1.45a	15.74±1.13b	ND	ND
1-Hexanal	B	182.52±8.82b	1044.85±65.63a	975.1±244.78a	132.75±0.18b	1284.79±71.17a
2-Hexenal	C	5086.10±253.62b	8196.24±407.08a	7276.33±288.93a	3313.78±4.37c	2768.89±228.06c
Hexyl alcohol	D	2467.36±144.46a	3164.41±177.75a	3181.07±462.69a	1152.88±3.07b	1240.03±55.70b
(Z)-2-Heptenal	E	149.02±16.89a	ND	69.70±1.00b	ND	131.40±12.00a
Hexanoic acid	F	ND	237.92±8.70a	152.14±1.08b	ND	ND
2-Pentylfuran	G	145.56±11.78a	53.39±4.20bc	69.85±6.78b	28.41±0.04c	ND
Trans, trans-2,4-Heptadienal	H	14.35±0.86c	50.74±0.48a	30.64±0.98b	ND	ND
1,3,6-Octatriene, 3, 7-dimethyl-	I	545.72±4.41b	779.97±3.93a	428.00±23.31c	274.46±0.36d	118.03±3.90e
1-Methyl-3-cyclohexene-1-carbaldehyde	J	117.21±2.05b	ND	ND	ND	264.89±15.33a
(E)-2-Octenal	K	37.19±3.20d	230.23±6.71a	194.08±7.43b	34.65±0.05d	133.29±3.40c
Linalool	L	32.71±6.68c	46.11±0.72bc	68.24±3.92a	34.65±0.05c	64.21±4.72ab
1-Nonanal	M	ND	42.55±3.70a	26.85±2.57b	21.41±0.03b	26.29±5.81b
Propanoic acid, 2-methyl-, 4-methylpentyl ester	N	51.05±2.06a	51.45±3.84a	11.15±1.46b	10.67±0.01b	19.99±0.24b
(2E)-2-Nonenal	O	300.04±40.25bc	374.54±10.20ab	495.66±47.43a	211.59±0.28c	391.30±11.63ab
Terpinen-4-ol	P	277.38±30.80c	472.26±5.84b	594.11±19.32a	251.37±0.33c	218.84±11.06c
Methyl salicylate	Q	751.01±21.41c	1861.70±16.65a	1711.70±34.32b	592.41±0.78d	748.76±14.06c
Trans, trans-2,4-Decadien-1-al	R	335.50±65.04b	364.80±5.84b	322.88±1.56b	518.48±0.68a	138.36±2.24c
Eicosane, 10-methyl-	S	16.16±0.71a	37.80±9.77a	24.19±4.52a	39.28±0.05a	22.08±5.37a
α-Ionone	T	ND	13.22±0.33a	13.14±1.71a	ND	ND
Geranylacetone	U	ND	38.61±2.62a	6.00±0.72b	5.68±0.01b	ND
Irisone	V	26.62±1.06bc	125.43±6.64a	12.01±1.45cd	3.06±0.03d	28.52±1.54b
α-cis-Himachalene	W	70.39±0.90a	70.96±3.35a	72.88±0.71a	70.57±0.09a	23.09±0.10b
2,4-Di-tert-butylphenol	X	ND	21.51±1.21a	ND	5.68±0.01b	ND

The above data were determined on the pepper samples from the third and fourth harvests. Data were the means of three replicates with standard error (±SE). Different letters indicated significant differences between treatments at *P* of 0.05 according to Tukey's multiple range test (n = 3). With no fertiliser reduction as the control (CK), the T1, T2, T3 and T4 treatments represented 20%,

40%, 60% and 80% reduction in fertiliser application from 0 to 6 days before each harvest, respectively.

Table S2. Screening of representative aromatic substances based on random forest model.

Aromatic	Substance number	Increase in MSE	*P*_value
3-Pentanone	A	0.48	0.00
1-Hexanal	B	0.07	0.96
2-Hexenal	C	0.42	0.00
Hexyl alcohol	D	0.31	0.00
(Z)-2-Heptenal	E	0.03	0.67
Hexanoic acid	F	0.04	1.00
2-Pentylfuran	G	0.29	0.01
Trans, trans-2,4-Heptadienal	H	0.16	0.90
1,3,6-Octatriene, 3, 7-dimethyl-	I	0.39	0.00
1-Methyl-3-cyclohexene-1-carbaldehyde	J	0.04	1.00
(E)-2-Octenal	K	0.04	0.61
Linalool	L	0.06	0.36
1-Nonanal	M	0.02	0.99
Propanoic acid, 2-methyl-, 4-methylpentyl ester	N	0.42	0.00
(2E)-2-Nonenal	O	0.03	0.83
Terpinen-4-ol	P	0.02	0.13
Methyl salicylate	Q	0.01	0.98
Trans, trans-2,4-Decadien-1-al	R	0.03	0.78
Eicosane, 10-methyl-	S	0.01	0.93
α-Ionone	T	0.01	1.00
Geranylacetone	U	0.03	0.90
Irisone	V	0.00	0.78
α-cis-Himachalene	W	0.01	0.87
2,4-Di-tert-butylphenol	X	0.01	1.00

The importance of various components in aromatic substances was measured as the ‘percentage of increase of mean square error (MSE)’ in random forests, with higher MSE values implying more important representative substances and identifying the significance of each substance.

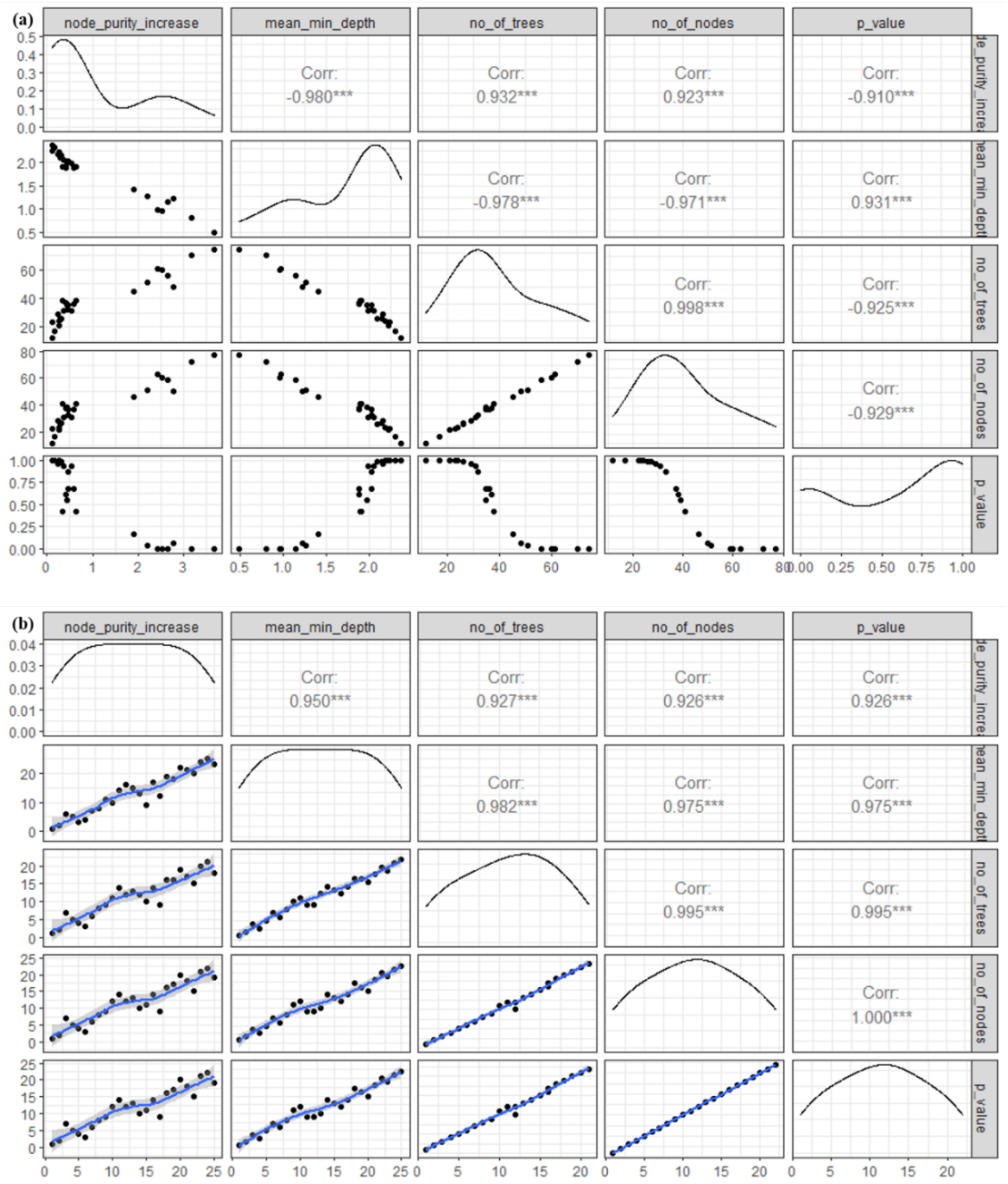

Figure S1. Relations between measures of importance and between rankings according to different measures. Among them, Figure S1a represented relations between measures of importance, Figure S1b represented relations between rankings according to different measures. The above relations analysis was based on the method of spearman rank correlation coefficient.